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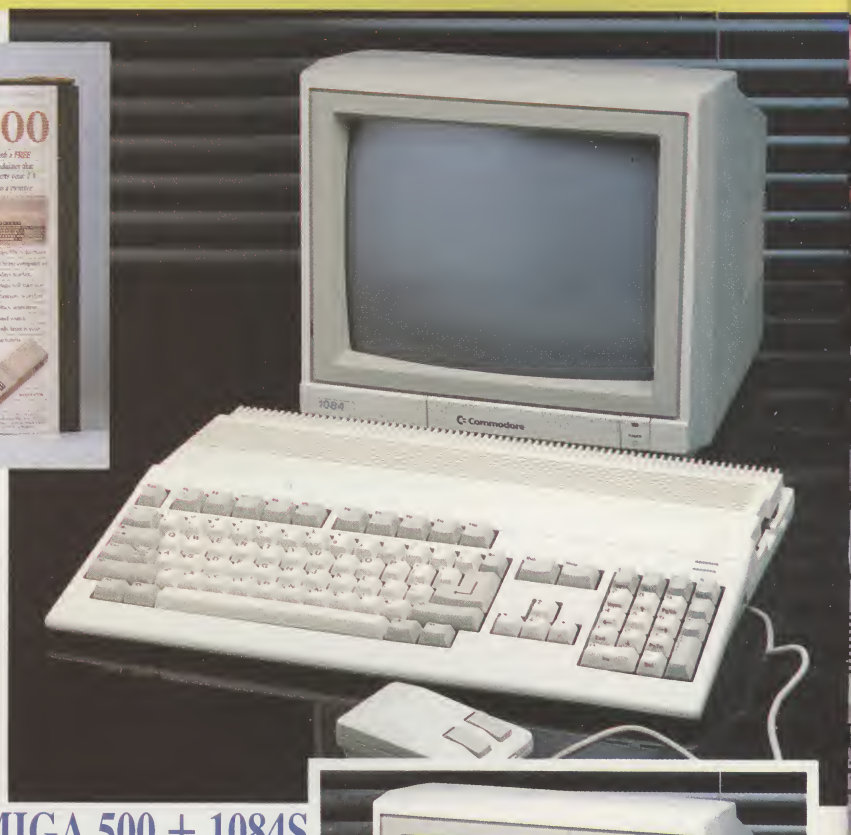
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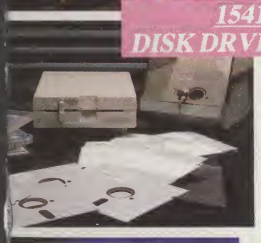
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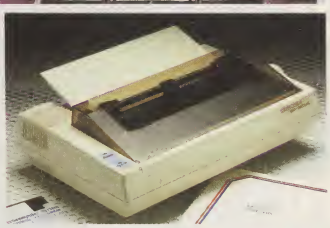
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THE AMIGA DIMENSION

On the cover of this ***AUI*** is a picture produced from the Digi-paint package, now in its 3.0 version. When Newtek, one of the very earliest Amiga developers, first appeared on the Amiga scene, their Digiview caused a sensation. One user described it to me as "magic" - a view shared by many then and since. Now very well-established with a reputed one in ten Amiga users possessing a Digiview and many more also using Digipaint, Newtek, as many other Amiga developers, may regarded as regularly producing miracle-level products. This process of achieving the extraordinary on a frequent basis has been called "Routine Magic".

It is an interesting term, routine magic, coined to describe Voyager, speeding out toward infinity and month after month,year after year creating little 'miracles' of information. These" miracles", at a distance of billions of miles, over four light hours away, are no less amazing because they are performed hourly, daily, routinely.

The on-board technology Voyager has used to accomplish these feats is less powerful than an upgradeless Amiga. 12 or more years old, Voyager contains little of the technological advances that we take for granted in an ordinary 68000 chip. Yet the tasks it is still succcesfully carrying out will prove immensely valuable to our understanding of the solar system.

One of the reasons for Voyager's continuing success has been the enormous effort put in back here on Earth to compensate for Voyager's primitive computing power. The ability to enhance, through today's greatly improved computing techniques, the data from Voyager has made it possible to simplify instructions and requirements but still achieve oustanding results.

For any of us Amiga users, accustomed to the ease with which our computer accomplishes very complex manoeuvres, the task of controlling Voyager's tiny computer and getting it to perform as desired would seem clumsy and crude. In effect, what is being achieved is to make Voyager's very simple computer emulate a much more complicated, twelve years more advanced, machine.

Co-incidentally, in this ***AUI***, we have a review of a product designed to let the Amiga itself venture to a new and possibly important emulation, its fourth for different machines. Following on from the MSDOS, 64 and BBC emulators, now arrives A-Max, created to make the Amiga into the much more expensive Apple Macintosh. The technical achievement of the A-Max emulator might well qualify it for the "Routine Magic" award

On the same lines, also following the Mac's example, comes the very interesting Ultracard, a concept which in its Apple Hypercard form is producing a whole range of creative applications which could make future computing techniques as different from today's as Voyager's computer is from the Amiga.

Peter Lee in his review in this ***AUI*** sees it as an idea that is not only "brilliant"but which anyone, novice or expert, could find enjoyable to use. The Ultracard, it seems, has the potential to be one of the most significant programs ever produced for the Amiga.

When developed and exploited and coming into everyday use, we may come to consider this "magic" to be routine, even if it offers a radically new way of looking at the Amiga environment. Familiarity breeds, at least, disrespect...

A competition we have in this month's ***AUI*** has, as its prize, an extraordinary control device, which is, in effect, a very close emulation of a real aeroplane cockpit joystick and panel. This was created by Sublogic for use with their flight simulators. It lifts the home computer simulation to a new dimension, in reality offering high professional level flying training that would previously have cost thousands of dollars or pounds on your home Amiga.

Software developments such as Ultracard and hardware like Digiview and Sublogic's control device pass quickly into general usage. The initial 'wow' factor fades and the magic becomes accepted as normal...

The 12 year long achievements of Voyager ought to remind us that science as a whole and the Amiga Dimension in particular enjoy regular miracles but the magic is no less because it happens every day. It usuallly takes extraordinary dedication allied to great creativity to accomplish an advance which later may seem simple, even obvious. just routine magic. But we should keep on reminding ourselves, that it is still absolutely genuine magic and should be so regarded.

When the Sun cools down, in five thousand million years or so, and the Earth freezes over lifelessly, humanity may no longer exist but Voyager will still be journeying on. Even if its little computer is silent, I still think that its feat and the achievements of its creators should win our admiration because for me they, like the Amiga, are sheer magic and magic can never be routine...

Antony H. Jacobson
Managing Editor and Publisher

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NEWSFILE



Coming Soon ...

It looks as if the next few months are going to see a few hot games cramming the stockists shelves, as the software houses start lining up in an attempt to win all the Christmas cash that will be floating around. MicroProse will be releasing CONTACT which emerges from the Firebird Software camp in what MicroProse class as an "Enormous space game". Contact will be available in October for the Amiga price £24.99.

◀ The latest in a long line of press releases has arrived from Arcana regarding MARS COPS. Contained inside an attractive red folder are three photos, two CV's, one for "Matthews", the other for "Julienne". This time Arcana have decided not to include any information on release dates, what formats it will be available on or even a contact address. They've also forgotten to print there name anywhere within the package ... I wonder why? As soon as we get any information on MARS COPS, we'll let you know.

If participating in an illegal car race is your kind of stuff, then Hewson's 5th GEAR may well be worth a look. Available for the Amiga, priced £19.99 it is due for release in November.

Electronic Arts are just about ready to release KEEF THE THIEF which they class as a "Tongue-in-cheek adventure game." It is available for the Amiga, priced £24.99, due for release this month.

Konix Switch Megablaster

The Konix Megablaster joystick is now available with microswitches, price £8.99. Konix believe that this joystick is the cheapest available in the UK using the microswitch mechanism. Other joysticks available from Konix include the trend setting hand-held Speed King and the pistol grip Navigator. All the products are assembled at the Konix factory in Ebbw Vale, South Wales. Available wherever Konix products are sold.

Prestel launches new mailbox service

Prestel has introduced a new Mailbox service, which replaces the existing Mailbox product.

With the current service customers can only send single-frame messages to a single recipient at any one time. The new Mailbox service, developed in response to customer demand, offers the following improvements: a summary of stored or unread messages; the ability to send messages of up to five frames in length; a multi-addressing facility which allows a message to be send, simultaneously, to up to 12 recipients; and the ability to hold up to five separate mailing lists, each list containing up to 240 names; plus many other features.

The sending of single-frame messages to a single recipient, and storage of messages, remains free of charge. Messages sent using the features listed above will incur a charge of 1p per item, except for receipt of a pre-addressed mailbox which costs 4p. Unsolicited advertising or promotional messages will cost the sender 20p per item. All charges are subject to VAT at the current rate.

Contact: Dialcom Direct: Freephone (0800) 200 700.

K-Roget

K- Roget, the first stand alone thesaurus for the Amiga, is now available from Kuma Computers Ltd. Based on Longmans Pocket Rogets Theasurus, K-Roget contains over 150,000 words and phrases, enabling the most appropriate word to be selected for a given meaning while using a word processor, or even a database or other program.

Keyboard, function key and mouse control options are built in enabling the user to operate the program in whichever way is preferred.

In addition to the standard thesaurus features of K-Roget, a phonetic spelling checker is incorporated. It traps words typed in as they sound rather than as they should be spelt, and offers correct possible words. This feature is especially useful to users whose first language is not English, Kuma claims.

There is one catch: to operate K-Roget, the Amiga system must include either two disk drives or a hard disk.

K-Roget is a real English version, rather than American, and it is organised in the same way as the well known and widely used book versions of Rogets Thesaurus. Price: £29.95 (including VAT).

Contact: Kuma Computers Ltd, 12 Horseshoe Park, Pangbourne, Berks. Tel (07357) 4335.

Superfile

Superfile from Southdata is based on a variable length Record, free form idea.

The company claims: some Superfile users have Records 10K long; and the largest client's database has 66,000 records.

In addition, Superfile has phonetic searching: if you look for "Andedososdubleshnemtaronuzm", or "Antid" when you actually want "Antidisestablishmentarianism", or "Smith" when he's actually called "Smythe".

Contact: Southdata. Tel: (01) 995 7587/7967 /9188.

Ink Jet Printer/Plotter

Houston Instrument has announced a combination raster/vector plotter system as the newest addition to the company's line of high performance graphics plotters. The HI JetPro 360 tm is a 360 dip (dots per inch) monochrome, ink jet printer/plotter capable of printing drawings as large as DIN A0 size on paper up to DIN A2 size. It accepts ANSI A, B and ISO A2, A3, A3 oversize, A4 and A4 oversize paper. Coupled with HI's JetView (tm) and ProPlot (tm) software, the JetPro 360 provides a complete hard copy control system that accepts both HPGL 758X and DM/PL (tm) plot files.

The JetPro 360 package is designed for making final plots of drawings up to DIN A2 size, for making fast, high-resolution check plots of drawings larger than DIN A2 size and for raster image store-and-retrieve applications. Capable of printing 220 characters per second at 360 dip, the JetPro 360 also serves as a high-quality text printer for applications like word processing, spreadsheets and desktop publishing.

The Jetpro 360 comes complete with JetView and ProPlot software, JetADI (Autodesk Device Interface) printer/plotter driver for AutoCAD and AutoSketch, IBM Proprinter emulation, a built-in automatic sheet feeder and a Centronics 8-bit parallel interface. Hardware options available include an RS-232-C serial interface and a variable-width tractor feed.

Three optional font cartridges are also available to expand the text-printing capabilities of the JetPro 360.

Invision

Following the release earlier this year of their image presentation software, Elan Design have announced a new title, INVISION PLUS, their latest attention-grabber in the Desktop video market.

The program evolved from the original Invision program, and is a combined video effects and video animation system which works with the LIVE! frame grabber produced by A-Squared Systems, a VCR or video camera, to create professional video effects.

Among these are: mirrors, tiling, strobe, blinds, wipes, tumbles, posterisation, trails and montage. The program features a new automatic rate FX control, realtime video capture and ANIM format compatibility.

The flexibility of Invision Plus allows the user to customise special effects, and also allows the capture of multiple digitised frames into memory for playback or step through.

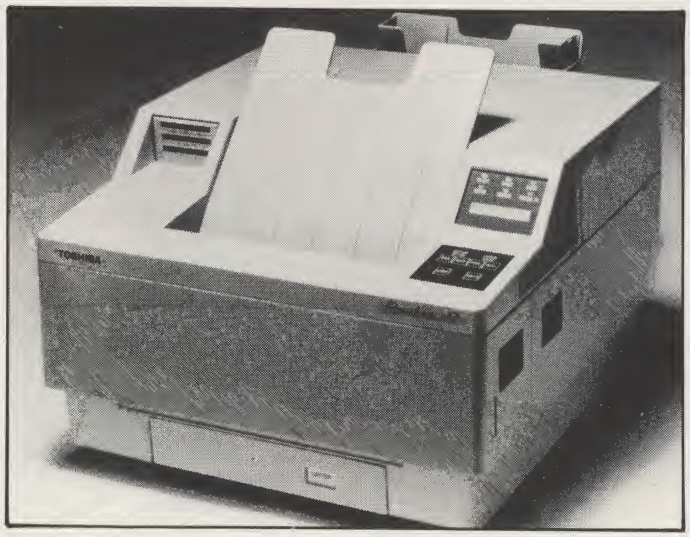
The program, which runs with a minimum 1 meg RAM, is priced $299, and owners of the original Invision have an upgrade option.

Meanwhile Elan's PERFORMER software, which hit the shelves in May, has brought an unparalleled degree of flexibility to imagery display.

The ability to assign any IFF, HAM, RGB, RIFF or ANIM file to a specific key means immediate control over a video presentation.

The timing and sequence of displays is editable, and individual animation frames can be dumped as standard screen images for use in an art package for editing. Performer is priced $59, and runs in 512K or more.

Details from Elan Design, PO Box 31725, San Francisco, CA 94131.
Tel. (415) 621-8673



Toshiba Page Laser 12 High-Throughput Printer

Printing at up to 12 ppm, Toshiba's Page Laser 12 printer is designed for high-throughput operations, with long life-span consumables a major feature. Toner life is quoted at 5,000 pages, drum life at 25,000 pages, developer at 40,000 pages and fuser at 80,000 pages.

It has graphics resolution of 300 x 300 dpi, and provides emulations for five major printers including LaserJet 500+ and Diablo 630. Resident fonts are Prestige Elite, Courier 10 and Line Printer. Contact: Action Computer Supplies, Abercorn Commercial Centre, Manor Farm Road, Wembley, Middx, HA0 1WL. Tel: (0800) 333 333.

SCULPT 3DXL

Amiga Centre Scotland have recently announced the availability of Sculpt 3DXCL, which they claim not only gives you a 300% to 800% increase in basic ray tracing rendering speeds, but also adds CSG spheres which let you render images like "The Juggler" in minutes instead of days.
SCULPT 3DXL gives you the power to build realistic living objects, ACS says. With Splines, your organic objects come to life as harsh joints are smoothed into natural curves.

Price: £129.00 (including VAT).

Contact: Amiga Centre Scotland, 4 Hart Street Lane, Edinburgh, Scotland, Tel: (031) 557 4242.

Literary Amiga

In Italy, interest has been shown in the innovative software package LITERARY AMIGA, which we reviewed exclusively in our January issue (pg 40).

Risorse per la didattica, the people responsible for selling Commodore hardware to educational institutions in Italy, have expressed an interest in the software, which is a text-style analyser written by two dedicated Italians.

Currently the program is Shareware (if you like it, you pay the authors for it), but if a deal goes ahead, clearly the program will be removed from free public access.

Megalink Transputer Boards

The MEGA-Link Transputer board series is growing continuously, say the makers, Advanced Computer Design of Germany.

The MEGA-Link Transputer boards are designed for the IBM XT/AT bus and for the Amiga 2000 there is a Link-interface. The Link-interface is auto-config and can be also used together with other Transputer boards than the MEGA-Link boards (for instance INMOS).

The Link-Interface which fits into the standard 100 pin A2000 slot has enough empty space left for experiment circuits and is designed to be also used as an experiment board. There is also an auto-config chip-select provided for your own circuitry. The Link-Interface including AFSERVER software comes for 3999 DM.

All MEGA-Link Transputer boards are compatible to the INMOS B004 development board so you will not suffer from a lack of software.

They have also introduced the MEGA-Link03 board, with a RAM configuration from 256k to 32MB. You can upgrade the RAM step by step according to your own personal needs. The MegaLink03 has only one T800 Transputer, but the MegaLink01 board gives you up to four Transputers each with up to 4MB RAM and up to 60 MIPS/9 MFLOPS. Transputers with 60 MIPS (Million Instructions Per Second) and used for, among other things, ray-tracing. The Mega-Link-02-Video Transputer board with one T800 (20, 25 or 30 MHz and 1 to 8MB) and up to 2MB Video-RAM gives you all the colors you need for computer graphics:

512 x 512 pixels 50 Hz Interlaced with 16.7 million colors.

640 x 400 pixels 70 Hz Non-Interlaced w. 16.7 mill. col.

800 x 600 pixels 50 Hz Non-Interlaced w. 16.7 [1]MIPS=either Million Instructions Per Secnd or Meaningless Information Provided by Salesmen (2MB Video-RAM nessary) mill. col.

800 x 600 pixels 70 Hz Non-Interlaced 256 out of 16.7 mill. col.

1024 x 768 pixels 60 Hz Non-Interlaced 256 out of 16.7 mill. col.

The MEGA-Link-02-Video board can be used without the other MEGA-Link products and build up the core of your Transputer system. This is very useful if you are mainly interested in computer graphics.

With 1MB RAM and 1MB Video-RAM the MEGA-Link-02 Video board sells for 6499 DM.

UNIX Software Market

By 1995, worldwide sales of UNIX and UNIX-like software products will reach $9.3 billion, up from sales of only $2 billion in 1985. Developed by AT&T in the late 1960's, UNIX is a powerful multiuser, multitasking computer operating system. UNIX-like systems, developed by other companies, share many of the features that make UNIX one of the most popular operating systems ever offered. These and other key findings are presented in a new report, "UNIX and UNIX-like Software Markets" just released by Market Intelligence Research.

Users turn to UNIX to take advantage of its portability, library of applications programs, and open standards and architecture. As users of UNIX and UNIX-like systems downsize to smaller computers, they want the advantages of UNIX plus the design features and user-friendly interfaces of microcomputers, the report claims.

Stress & fun(?) on the Broker's Floor

Profisoft of Germany have introduced "Wall Street Wizard," released on the LIFETIMES label. Designed from scratch for 16-bit machine technology, the program demanded nearly 2 man years from plot to final testing, profisoft claim.

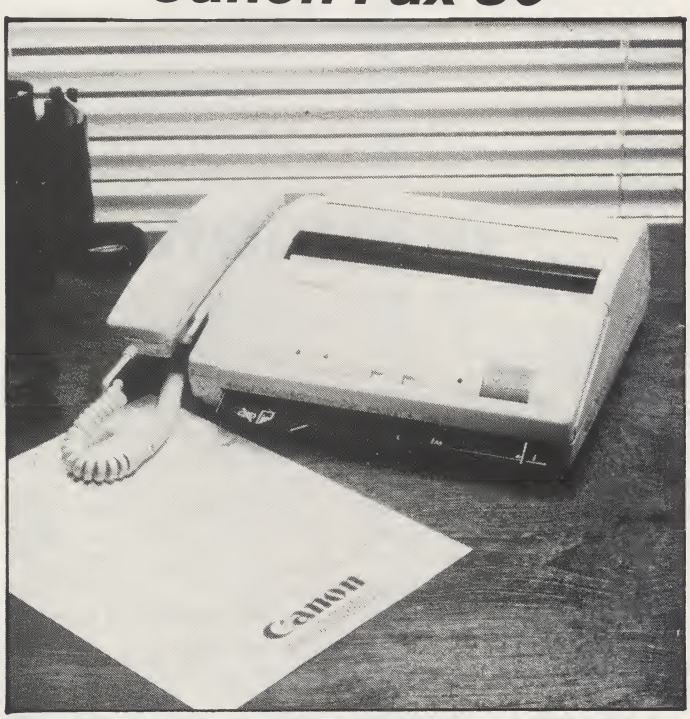
Action within the stock exchange activity occurs under real time conditions. As with the original scenario, you only have a split second chance to decide what to do — whilst keeping you eye on the bulletin board.

Tactics and psyche of the broker are tested without mercy. Each participant in the game may enter what he or she believes to be the best set of personal characteristica. The right way to organize and gather data also contribute to one's overall performance.

As a technical delicacy, the company introduced an option to link-up your computer with any other machine running "Wall Street Wizard" via modem. All events coincide under real-time conditions.

Peculiarities of the various stock exchanges have been omitted to enable the player to enjoy to the limit that quality common to all: stress and blood, sweat & tears. Available for the Amiga and PC, price: TBA.

Canon Fax 80



Offered by Action at £595.00, including 24-month extended warranty and free installation, the Canon Fax 80 can transmit an A4 page in 18 seconds, and accepts up to five sheets for a single transmission.

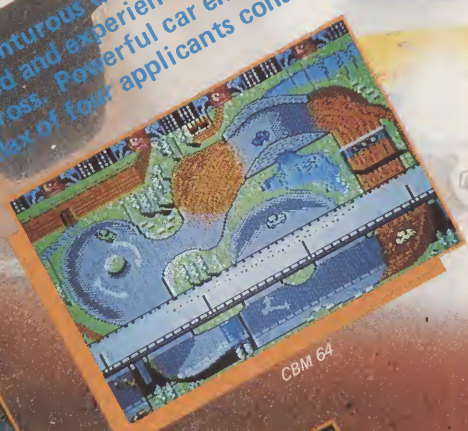
This looks to be ideal for use where space is limited; it measures 280 × 250 × 92mm — smaller than the average portable typewriter — and weighs only about 5kg (11lbs) (in case you want to take it home — but who works late these days???). It is fitted with a handset that can be used as an ordinary telephone when the fax is not in use, and also provides a handy personal copying facility. Contact: Action Computer Supplies, Abercorn Commercial Centre, Manor Farm Road, Wembley, Middx HA0 1WL.

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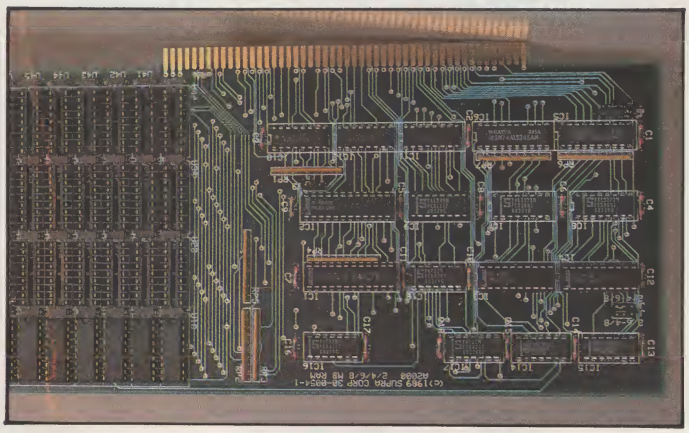
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CBM 64 - SPECTRUM AMSTRAD - MSX
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SupraRAM

Supra Corporation, manufacturer of SupraModem 2400 and SupraDrive Hard Disk Systems, has announced shipment of two new Amiga products: the SupraRAM 2000 2-4-6-8 MB memory board for Amiga® 2000 series computers, and the SupraRAM 500 1/2 MB memory board for Amiga 500 computers.



The SupraRAM 2000 comes in 2, 4, 6, and 8 MB configurations and installs in any internal Amiga 2000 expansion slot. According to Supra Corporation, the board features zero wait states, hidden refresh, and a four-layer board that reduces noise and improves reliability, and it includes a test mode and test software to make troubleshooting easy. The SupraRAM 2000 can be expanded to 4, 6, or 8 MB from its initial configuration, allowing users to expand system memory when it's most convenient and affordable to do so. Prices of the SupraRAM 2000 depend on the amount of RAM installed: 2 MB — $499, 4 MB — $849, 6 MB — $1149, 8 MB — $1399 (US prices).

The SupraRAM 500 is a 1/2 MB RAM board that increases the Amiga 500 system memory to 1 MB. It installs in the memory slot on the bottom of the Amiga 500 and includes a battery backed-up clock/calendar.

Comparable to the Commodore A-501™ Memory Expansion Board, the SupraRAM 500 offers equal or better performance the company claim, at a substantially lower price — only $149 retail (populated).

In addition, the SupraRAM 500 can be used as additional chip memory on Amiga 500s that have Commodore's newest "Super Agnes" chip installed. Both boards are made in the U.S.A. and come with a 90-day warranty. Contact: Supra Corp., 1133 Commercial Way, Albany, OR 97321.

Tel: (503) 967-9075.

More Copyright Protection

The specialist Commercial Unit of City law firm Titmuss Sainer & Webb has produced a brief guide outlining the changes to copyright protection for computer software included in the Copyright Designs & Patents Act 1988 which came into force on August 1. The new provisions are aimed at removing some of the previous difficulties and anomalies of applying copyright protection to new and developing software technology.

Paul Gardner, solicitor and author of the guide says, "It is encouraging that copyright law, as applied to computer programs, has with this Act taken a giant step forward — if only into the 1979s." Although it is questionable whether computer programs are satisfactory protected by the new Act those involved in the development and creation of new computer programs should make themselves familiar with its provisions. Contact: Phelan, Titnuss Sainer & Webb, 2 Serjeants' Inn, London EC4Y 1LT.

Tel: (01) 583 5353.

LC24-10 Now Less Than £300

Due to the success of its low-coast, multi-font printers, Star Micronics U.K. Ltd has announced price cuts across its entire range of business Series printers.

The biggest reduction is on the LC24-10, which is now priced at £299 (down from £399), making it the first multi-font, 24-pin dot matrix printer with paper parking for under £300. The LC-10 has been reduced from £299 to£199 and the LC-10 Colour from £299 to £259.

Star Micronics U.K. Ltd is a wholly-owned subsidiary of Star Micronics Co. Ltd., of Shizuoka, Japan which, in 1989 reported revenues in excess of £300 million. The company supplies a range of printers: in addition to the Business Series, there is a Professional Series, a Laser Series and a Specialist Series.

Populous Data-Disk: New Landscape

The fifth landscape in Populous, The Promised Lands, has now been changed. The Samurai landscape will now be replaced by The Bit Plains. this is a computer programmer's world with computer printout paper as the land, various computers ranging from ZX81's to Crays as the settlements and cigarette stubs and pencils as various landscape features. (I for one, would like to see a Populous Journalists' Land, with PR people waiting behind mountains of press releases, rivers of highly caffeinated coffee, printers that jam on press nights, elusive outside contributors, and, of course, the powers to create an earthquake, when necessary). Joking aside, if you have yet to play Populous ... you are definitely missing out on an exciting game.

Available from Electronic Arts, it is very unique and promises to have a long and well-publicised shelf life.

300 d.p.i. Flatbed SCSI Scanner

Panther Peripherals has launched an A4 Flatbed Scanner.

The Datacopy 730GS is a small and light weight scanner that will scan a full A4 sheet at resolutions from 60 up to 300 d.p.i. in 15 d.p.i. steps. Iamges can be scanned in black and white with optional halftone dithering patterns or in up to 64 grey scales. Standard functions include edge detection on black and white images, black or white borders around a scanned image and 4 levels of contrast with 16 brightness settings.

Average time taken to scan a full A4 image in black and white mode is 14 seconds, the same image taking approximately 2 minutes at 300 d.p.i. with 64 grey scales, the company has announced.

Once scanned into the Amiga's memory the image can be saved as a Virtual Page, for use with Express Paint or C Ltd's LazerXpress printer, or as a standard IFF file. The image can be resized to fit a standard Amiga screen, Lo-Res, Medium-Res, Interlaced or Non-Interlaced, or a section of the image can be cut out and saved as an IFF file.

Full Optical Character Recognition will also be available, allowing documents to be scanned and converted to standard ASCII text for use with word processors, DTP packages.

Price:(the Scanner, Interface and Amiga software) £1495 (inc. VAT). Contact: Digipro, Tel:(01) 905-1030.

AMIGA Graphics Card

Hi-Tension have officially announced the development of an AMIGA Graphics Expansion Card. Called the AMIGRAPHEX, it will be available in two versions, both increasing the resolution and available colours of a standard Amiga 2000, occupying one internal expansion slot.

Stated for release this month, AMIGRAPHEX I will have a resolution configurable up to 1024 x 768, 256 from 16 million colours, and occupy 1.5 Mbyte of video RAM and 512 Kbyte (upgradeable to 2 Mbyte) of program RAM.

The processor, Hi-Tension report, is a TMS 34010 clocked at 50 MHz. The company say the AMIGRAPHEX I is a general purpose advanced graphics card which when combined with Microsoft Windows will allow high performance versions of many commercial packages to be run on the Amiga 2000. Price: £899.00.

AMIGRAPHEX II has a resolution of 1280 x 1024, 16 from 4096 colours, and 2 Mbyte of video RAM. The processor is a AMD 95C60 (QPDM) clocked at 16 MHz, and will be suited to high performance CAD applications. AMIGRAPHEX II also has an on board serial I/O plus embedded controller for hardware cursor update. This facility is aimed at direct connection of a touch screen or graphics tablet, Hi-Tension say. Price: £1599.00. In addition, there is an AMIGRAPHEX II (Advanced Palette Version) which has an enhanced palette to give 256 from 16 million colours.

Contact: Hi-Tension Computer Services Ltd, Alexander House, Station Road, Aldershot, Hampshire, GU11 1BQ. Tel:(0252) 344454.

Bell Rings Off

Stewart Bell, who built Microprose UK into one of the top companies in Europe, has abruptly resigned.



Microprose founder Major Wild Bill Stealey with now ex-U. K. boss Stewart Bell.

AUI learned of this news just as we went to press.

Bell has been the managing director of Microprose UK for the last three years and took them from a virtually unknown simulations company to an organisation with wide ranging products - which as of this moment hold three places in both the 8-bit and 16-bit Gallup charts. Recently, he engineered the Microprose takeover of Telecomsoft, one of the UK's leading software companies with the Firebird and Rainbird labels.

The reasons for Bell's sudden departure are as yet unrevealed and Microprose refuse to comment. Watch this space for further details.

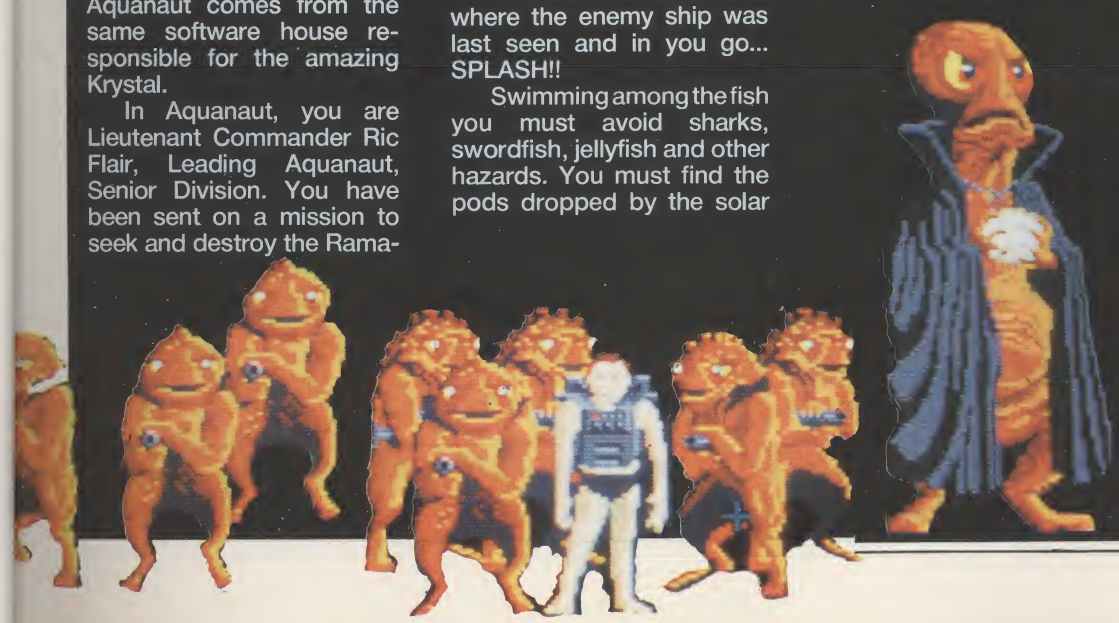
Aquanaut

Fissionchip call it the deepest game ever for the Amiga. Aquanaut comes from the same software house responsible for the amazing Krystal.

In Aquanaut, you are Lieutenant Commander Ric Flair, Leading Aquanaut, Senior Division. You have been sent on a mission to seek and destroy the Ramanishi Flagship, and , if possible, find out who or what is receiving it's coded transmissions. What is going on down there?

You are taken to the area where the enemy ship was last seen and in you go... SPLASH!!

Swimming among the fish you must avoid sharks, swordfish, jellyfish and other hazards. You must find the pods dropped by the solar gliders. They contain underwater commando equipment, which can make life much easier.



Surviving the perils of the deep, you arrive at the Ramanishi ship and must find a way to destroy it. If you succeed, you are transported into a sub-marine maze. This labyrinth is inhabited by strange mutant creatures and some kind of defence system... What does this mean? You must find out.

If you manage to find your way through the caverns and stay alive, you will emerge into a sea-nario deeper than anyone has gone before - the fabled lost city of Atlantis!!

Fissionchip call this a subtle combination of shooting and avoiding, collecting and utilising in an underwater circus of hectic action - so come on in, the water's fine. Last one in's a scaredy-cat! Price: T.B.A.

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HMSL

HMSL, the Hierarchial Music Specification Language, is an object oriented programming language for experimental music composition. Developed by Phil Burk, Larry Polansky and David Rosenboom at the Center for Contemporary Music at Mills College in California, HMSL is an extension to the Forth language that runs on the Amiga. It provides tools for scheduling the performance of a hierarchy of abstract data and user written functions, and comes with a complete MIDI library for controlling and responding to most synthesizers.

HMSL provides an interactive programming environment for the manipulation of compositional objects that can be used for algorithmic composition and interactive computer assisted performance. Because Forth, the foundation of HMSL, is a completely general purpose programming language, almost any idea can be incorporated into the music.

Larry Polansky has been writing in HMSL for several years. His piece, Simple Actions, uses the MIDI toolbox to access the system exclusive features of a Yamaha FB-01 and a Roland DEP-5. A variety of simple activities like changing the FM algorithm or LFO rates are controlled from a custom graphic screen. These activities combine together to create a very complex sound reminiscent of modular analog synthesizers.

In 17 Simple Melodies of the Same Length, a performer plays 17 short melodies which are captured by HMSL. The melodies are then sorted into 3 different orders based on 3 different criteria, or "morphological metrics". The melodies are then replayed back in their new orders using 3 parallel voices.

The robot also responds with its own synthesized voice, and can learn new words and their meanings while carrying on a conversation about its tasks.

"Natural language understanding is a major motivation for this research," Flanagan said. "A machine needs to 'understand' its world if it is to perform requested tasks."

Although SAM is primarily a research tool, such a remote-controlled, voice-activated robot could have future applications in hazardous or sterile environments, and could be used by an operator having little or no special training.

In B 'rey' sheet he programmed HMSL to follow a singer, Jody Diamond, as she sang cantillation melodies from the Torah. At the beginning the singer is almost ignored while HMSL generates pitches in a 17-limit tuning space, eg. 17/5, 8/14, 3/17 or other arbitrary ratios of a fundamental pitch. The timbres are also changing constantly be deforming several Amiga audio waveforms in real time. As the piece progresses the computer follows more and more closely until, finally, the tuning space is greatly restricted and the waveforms are much closer to sine waves. By this time HMSL is playing notes that correspond directly to the singer. (Fascinating, isn't it? — Asst. Ed.)

Others have used HMSL to generate melodies from the Life program, control compositional algorithms from a MIDI keyboard in real time, perform experiments in psychoacoustics, and explore just intonation and other tuning systems.

Contact: Frog Peak Music, Box 1051, San Rafael, CA 94915 (USA).
Tel: (415) 485-6867.

A literature packet containing articles, sample programs, concert notes, etc. is available for $6 from Frog Peak. HMSL source code and manual is ($120.000 if purchased with HMSL). Overseas shipping add $15 for surface mail and $50 for air mail. Canada add $10.

Who's Counting?!?

Did you know that only 127 common English words can make more than 300,000,000,000,000,000 grammatically correct, meaningful sentences?

A robot arm at AT&T Bell Laboratories here not only knows that fact, but can understand and respond to all 300 quintillion questions assertions and imperatives as they are spoken in normal human conversation.

SAM, short for Speech-Activated Manipulator, is part of AT&T Bell Laboratories' (of New Jersey, USA) continuing research into computer speech recognition and machine intelligence. It was developed by Michael Brown and Bruce Buntschuh, of the Robotics Principles Research Department, and Jay Wilpon, of the Speech Research Department.

"Each of the basic attributes of sight, comprehension, touch and speech can be mimicked independently. But by integrating these complementary senses in one machine, we give the machine the ability to comprehend constrained-task work environments, and to conduct spoken-language interaction with humans," said James Flanagan, director of the Information Principles Research Laboratory.

To perform its assignments, SAM is equipped with an ultrasonic rangefinder, two cameras, and touch-sensitive grippers. Its intelligence resides in eight computers, including an AT&T-designed parallel processor that performs up to a billion floating point operations per second for speech recognition.

Twist & Shout

This is not a new solution for back pains, or even a software program for chiropractics. Instead, Twist & Shout, published by The Software Toolworks and distributed in the UK by Mindscape International, provides sideways printing for any spreadsheet, word processor, or project manager file, regardless of number of columns. As a bonus, the package includes a disk-based print spooler, allowing background printing for all applications.

Twist is the core of the package, offering direct sideways printing of worksheet files. Configurable as a Lotus macro, the program can also be added-in to Framework, Quattro, Symphony, and VP Planner Plus. As a standalone, it can also directly read SuperCalc, Smart, Multiplan, Javelin, VisiCalc, and The Secretary Bird worksheets, as well as any ASCII text file — useful for A4 landscape priting from a word processor.

Twist offers familiar Lotus-style commands, fifteen sizes of print-out (up to 240 lines/page), colour, bold, and italic printing, and context-sensitive on-screen help.

Shout is a banner-printing utility capable of producing lettering up to 13.5" high in up to 10 different fonts. Text can be typed directly into the program or imported as ASCII from a word processor; a useful 'dynamic length display' shows the length of the banner.

Twist & Shout supports the majority of laser and inkjet printers and all dot-matrix printers, including colour. The program carries a recommended retail price of £49.99 including VAT, and should be available through most dealers. A function comparison chart with Sideways is attached. Contact: Mindscape International Limited, Rolls House, 7 Rolls Buildings, Fetter Lane, London EC4A 1NH.

Tel: (044) 486545/547.

Trilogic 'leads' the way . . .

Trilogic tell us their one often requested item is an adaptor to enable two computers to share one monitor. The most popular combination seems to be Amiga & ST with a tv or monitor with 21 pin scart socket, they tell us.

They have developed a MONITOR SHARER, to enable any two computers which have tv or monitor leads terminating in a Scart (euro) plug to share one tv or monitor which has a scart socket.

In use, the existing computer scart leads are connected to the scart sockets on the Monitor Sharer and the Sharer lead connected to the monitor. Switching computers is achieved by a single press button switch which can be operated at any time — even whilst the computers are powered up.

A second version of the monitor sharer are also available which can be used to switch between a computer & a video recorder and a third version works with the Commodore 1084 monitors which have 6 pin Din RGB sockets. (A bonus with the Sharer for this monitor is that it can be used to eliminate the interference from the computer when using the video inputs without having to switch to switch off or unplug the computer the company claim.)

Prices: VAT & postage included. Monitor/TV Sharer for 2 computers is £15.99; Monitor/TV Sharer for video recorder & computer £17.99; and monitor sharer for 1084/1084S & 2 computers £15.99. Suitable for use with Philips CM8833, CM8852, Sony, Normende, Philips, Fidelity, Hitachi etc TVs with Scart socket.

Contact: Trilogies, Unit 1, 253 New Works Road, Bradford, BD12 0QP. Tel: (0274) 691115.

Poixound

Pixound has been introduced by Hologramophone Research of New York City. They claim it is a musical screen interpretor which uses both MIDI and Amiga internal voices. By translating the red, green and blue contact of each pixel into chords (built on various scales), Pixound lets you hear what you see. For centuries, artists and musicians have wanted to swap media and many efforts have been made along these lines such as light shows, color organs, etc. The algorithms we put into Pixound are unique in that they seem to be accurately translating visual information into sound, Hologramophone tells us.

Since you can actually compose and perform unique music with Pixound, the company added MIDI recording so that more serious musicians can use Pixound to generate melodic and harmonic sequences for use in other music programs.

Price: $49.00 (US). Contact: Hologramophone Research, 231 East 14th Street, Suite 4B, New York, New York 10009. Tel: (212) 529 8845.

Compulink expands its horizons

CIX, the Compulink Information Exchange, announced ambitious plans for the 1990's and beyond. the latest move in CIX's expansion plans is the addition of Tony Wright as Marketing Manager.

CIX reports that the last year saw a steady growth with the number of users nearly doubling and the number of incoming lines also doubling to 32. Four of these new lines are dedicated to high speed use, and are locked to 9600 bps. All other lines support up to 2400 bps with MNP5 error correction.

CIX has been in operation since 1985, and has regularly had to increase the number of available lines to cope with user demand. The next expansion is likely to be to 64 incoming lines, and is expected to occur sometime during early 1990.

Compulink was formed in 1984 with CIX first becoming operational in February 1987 using the 'COSY' (Conferencing System) software.

Compulink may be contacted on (01) 390 8446, voice; (01) 399 5252, CIX.

M.E.S. Budget Expansion Board

Memory Expansion Systems is a new company specialising in the development and manufacture of hardware upgrades for popular computers. The first of these products is a 512K memory card for the Amiga A500.

The main selling-point of the board is its price: £79.95 inclusive of V.AT and postage & packing. The board plugs into the A500's expansion port underneath the keyboard. No soldering is required. It also features a "expansion memory 'on/off' switch" which enables the user to enable/disable the sexpansion memory without having to remove the board. Some oder software uses a rather clumsy protection system which detects the expansion memory and does not allow the program to load if the memory is enabled.

Contact: Memory Expansion Systems Limited, 2nd Floor, Britannia Buildings, 46 Fenwick Street, Lipverpool, L2 7NB.

Tel: (051) 236 0480.

The Silicon Disk

One of West Germany's leading electronics specialists, involved in the production of military and communications equipment, has placed an order with Micro Control Systems to take £250,000 worth of Silicon Disks, Micro reports. The order marks the first major foothold for the Nottingham-based innovator of advanced memory products in the European marketplace.

The company promotes the Silicon Disk as a solid state "disk" system faster than bubble memory and more robust than mechanical disk drives. It is particularly suited to hazardous environments and in running large programs such as CAD/CAM.

Micro Control Systems launched the Silicon Disk at the end of last year. It is already winning a large share of the bubble memory market by virtue of its speed. The device operates at "silicon speed", achieving data transfer rates of up to 300,000 characters per second (cps) — bubble memory peaks at around 50,000 cps and hard disks at around 27,800 cps.

The Silicon Disk is able to store data in RAM or EPROM. For theformer, files are backed up by a rechargeable battery power supply which will retain data for for months. For EPROM, programs can be stored permanently, safe from processor failure.

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As with all MCS products, the Silicon Disk carries a two year parts and labour warranty. It is priced from £299 and more details can be obtained by telephone the MCS Technical Support Line on (0602) 391204).

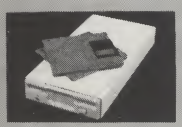
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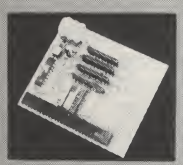
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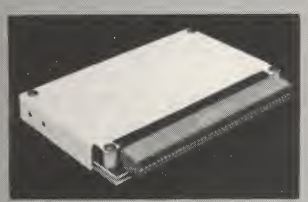


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Maintenance Free

Commodore Business Machines (UK) Ltd has announced that all its PCs sold from now on will carry one year free maintenance. Each PC shipped will include a pre-paid card which the customer completes and sends to Commodore's third-party maintenance company, Granada Computer Services (GCS), within 30 days of purchase. The machine is then covered for one year's free on-site maintenance.

The scheme covers repairs for the basic system, and a straight exchange for faulty monitors or printers. Maintenance for all Commodore PCs and PC bundle configurations are covered, with the exclusion of the Amiga range and additonal non-Commodore kit. Details of special monitors, additonal cards, laser printers etc, are included on the reply-paid card in a separate section. Maintenance for these extras is covered through a charge under a separate agreement.

GCS engineers operate from 44 centres in the UK. If a fault develops, the end-user contacts Call Control, which reports the fault to the engineers, who make a preliminary diagnosis from the available information. Replacement parts are anticipated by the engineers, and are shipped by courier to the customer. The engineer then arrives to carry out any repairs necessary.

Data protection

In his Annual Report to Parl ament just published the Data Protection Registrar, Mr Eric Howe, states that date protection issues are arising increasingly frequently and in wider and wider contexts. Complaints from the public, too, are increasing. He has now taken the first formal enforcement actions against data users. He cites a number of areas where significant data protection issues have arisen in the course of the year. These include: Community Charge Registers; The Football Spectators Bill; computer 'hacking' and the law; use of third party information for credit assessment; obtaining information fairly, for example for mailing lists; and driver information systems.

A sign that the public are becoming increasingly aware of the implications of the Data Protection Act is the rise in complaints received by the Registrar. The total number for the year ended 31 May was 1122. This compares with 836 complaints in the previous twelve month period.

Speaking in London today, Mr Howe said, "Data users have now had more than four years to become familiar with the provisions of the Act and the requirements for good practice. During this time I have made considerable allowances for the learning process. Many data users are now due to re-register and a gentle line is plainly not right for those who fail to do so."

The Way to Use XCad!

Spring 1989 marked the first release of X-Shell. X-Shell is not a single program, but, as its name implies, it is a "shell". One purpose of a software shell is to surround a target program and replace its user interface with another, easier and more powerful presentation. The target program of X-Shell is X-Cad. Price $199 (US).
Contact:
GRAFX Computing, 1140 Post Road, Fairfield CT 06430.
Tel: (203) 255 5166.



Ranger Z88

A battery-operated, 3½-inch IBM PC-compatible flexible disk drive for the Cambridge Computer Z88 portable microcomputer has been developed by Ranger Computers.

Known as RangerDisk, the new product allows Z88 uses to use 720kbyte floppy disks as both a storage medium and for exchanging files with IBM-PC compatibles, IBM PS/2 and Apple Macintosh IIe computers.

RangerDisk is a self-contained unit with a robust aluminium housing. It operates from six 'AA' alkaline cells or an optional AC adaptor, and is suitable for portable, home or office use. RangerDisk costs £450 (plus VAT). Optional accessories include a mains adaptor and a woven nylon carrying case. Ranger also plan to introduce future versions of RangerDisk for use with a variety of other battery portable computers. Contact: Ranger Computers Limited, The Innovation Centre, Boughton Green Road, Moulton Park, Northampton, NN2 7AH.

Scanlab Software

ASDG Incorporated has released version 1.1 of Scanlab, the utility software that accompanies its Professional ScanLab package for the Commodore-Amiga 2000 and 2500 personal computers.

The company claim Professional ScanLab's utility software now has improved 24-bit electronic colour separation routines that yield truer colours than previously possible when used to prepare films for professional quality offset printing.

ASDG tell us Magenta ink, for example, is not 100% magenta. It actually has small amounts of cyan mixed in.

Professional ScanLab version 1.1 makes allowance for such impurities and yields electronic colour separations that are superior to those previously possible.

Priced at $995.00 (US), ASDG's Professional ScanLab is an advanced hardware-software combination for the Amiga 2000 or 2500 personal computer that lets users connect to and control the JX-300 and JX-450 24-bit colour desktop scanners, manufactured by SHARP Electronics Corporation of Mahwah, New Jersey, USA.

U.K. Home Computer Statistics

Britain has the highest number of personal home computers incomparison to other European nations according to Mintel's *European Lifestyles* 1989 report. Approximately 23% of UK households own a computer, comparing to Holland (17%), Italy (14%), Germany (13%), Spain (13%), Belgium (10%) and France (7%).

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SIGGRAPH 1989

Martin Lowe reports from Beantown, where the pro-graphics world recently met

Siggraph is the 'Cannes' of the com puter graphics world where developers display the most exciting and advanced products, present the latest theories, and where the leaders in computer graphics gather to discuss and chart the progressions for the 1990s.

Generating 'reality'

One of the buzz concepts is Cyberspace — the human becomes part of the machine and participates directly in 3D computer generated reality. In the early hours of one morning I strolled into a hotel bedroom where they had set up a bicycle. If you rode it, wearing special headgear incorporating an LCD screen, you would see a view on this screen, which is your total view, which responded to your handling of the bicycle, speed, direction etc. and the angle you turned your head. This may be the dream of every Amiga games player, but it also is a serious and major step in computer graphics Research and Development.

This approach is best represented on the Amiga by Calligari, shown on the Commodore booth by Octree. Calligari is a 3D rendering package that allows the user to see and to interact with a 3D wire frame view of the scene. Editing is done in real time. Several versions of the package will be available ranging from a consumer priced package through to a full broadcast quality animation and 24 bit rendering package.

Calligari is the inspiration of Roman Orlansky who has been working on the program for 4 years. he firmly believes that "3D reality will replace 2D window environments." Roman promised a PAL version and when this arrives we will be expecting to hear a lot more about Octree's range of products.

I was fortunate to catch up with RJ Mical who talked about the times when the Amiga was first shown at Sigraph 85 and said "I am delighted and proud to see how far the Amiga has gone in the last years." RJ has "lots of Amigas" both at home and at work and it is still the machine he will use in preference. Summing up RJ Mical said "It's my belief that the Amiga will become the premier low cost video production vehicle of the 90's."

Hardware

One of the most persistent critisisms of the Amiga, amongst professional users, has been the limitations on its resolution and number of colours. 1K × 1K resolution and 16 million colours are increasingly being seen as a minimum standard. The University of Lowell (no relation) have made a contribution to this deficiency with the development of an Amiga graphics board, which CBM have now commissioned and will release as the A2410. It incorporates the TI 34010 processor and offers 256 colours from a palatte 16 million at resolutions 1000 by 1000 pixels.

The board was showing on the Commodore booth and the display looked real nice. The University of Lowell also had their own booth. They have been involved with the Amiga a long time now and were showing a range of impressive applications from image processing through to a laser light show.

I asked Richard Miner, who is the system designer of the A2410 about the significance of the board for the Amiga. He believes "it will open up new avenues for current software to higher resolution and more colours. This is vital to help to legitimise the Amiga to compete in the professional market place." Not surprisingly, X-Windows drivers are also being developed for the board.

Amiga Night Out

The night before the exhibition opened, the Boston Computer Society held an Amiga evening. The speakers were Dale Luck, Martin Hash and Eric Lavitsky. In the audience I spotted Bill Hawes, author of the AREXX package. No he has made one of the great contributions to the Amiga. His implementation of the AREXX language allows inter process communication on the Amiga in a simple and standardized way. Something that rival computer manufacturers



are still talking about.

Martin Hash gave a demonstration of his latest package — Animation Soundtrack. It really is superb. It has extensive range of editing features normally found in dedicated sound packages, plus the ability to synchronise these with single frame accuracy to animations. You can take your animations created with, say De Luxe Paint III and add a four channel soundtrack to them.

At Siggraph, Hash was also previewing Animation Journeyman, a major upgrade on Animator:Apprentice. Existing users can receive the revised modules as they become avilable. For organic 'Disney' style animation there is no competition on the Amiga. Journeyman allows, for example, direct painting on the polygon generated object.

Also at the BCS meeting, as well as at Siggraph, was Eric lavitsky of Active Circuits. Another company catering to the professional user of the Amiga. Their first product, Image Link is now available. This allows the interchange of bit mapped graphics

between a variety of formats (i.e. Digi View (21 bit) ILBM (up to 24 bit), PICT and PICT2 (24 bit), Sculpt RGB (24 bit), Targa (6 bit) and vista (24 bit). Additional modules will include Sun, Rasterfile and also transparent display from Amiga to the Targa, at the click of a mouse button. This is how the Bridgeboard should be used.

A fascinating use of the Amiga, demonstrated on the Commodore booth, wa the OPTICOMP system. Using light in the visible and infra red spectrum, a camera, and an input device using a DSP chip, the human body is being imaged in 32 bit planes!

Dr. John Davis, Advanced Rolfer, of Optimum Competitive Technologies explained how it could be used in diagnosis, as it revealed the soft tissues (that hold the bones). Scarring or adhesions often will not show on the skin surface, and existing techniques such as X-rays and NMR (nuclear magnetic resonance) pass right through. The technique is entirely new but already he could show through a series of scans how the diagnosis, followed by appropriate treatment, led to a successful cure. I have no doubt that other uses will also be found for this system.

Another participant at Siggraph was Great Valley Products. Gregg Garnick (VP Sales and marketing) said "from GVP's perspective we are encouraged by the Amiga's penetration into the professional market. We are excited and enthusiastic about GVP's product line in addressing this growing market. Both the 44MB removable hard disk and the new 150 MB Tape Streaming backup becomes more and more important as the Amiga matures and extends into the Unix arena."

Dileep Sharma was also at Siggraph representing Techex. you should have seen the reactions when people saw his creations, rendered on Sculpt-Animate 4D in 24 bit planes, converted and displayed on the vista board and output as 4000 line 35mm slides.

Byte By Byte, despite their recent Amiga activity — release of Sculpt Animate Junior, Sculpt 3D XL and now version 2.09 of Sculpt-Animate 4D — are one company who have lost patience with the slow progress of the Amiga. Their president, Scott Peterson, demonstrated the Mac version of Sculpt 4D, surrounded by eager Apple executives, on their own booth. I suspect it won't be long before we wee the product on some very professional rendering machines.

The last company I have space to mention, but not the least is NewTek. They were showing the Video Toaster. Their spokesman, Robert Blackwell, said "the Toaster (NTSC version) is looking on target for Xmas release. Digipaint II has been very well received. Reviewers have priased both its interface and speed."

Alan Hastings (of Videoscape fame), but now with his new animation rendering package. It looks great, but work is still going on, so do not expect an early release.

I also was able to have a chat with Tim Jennison, designer of Digi View and founder of NewTek. He did promise a filter unit for users of Digi View with a colour PAL camera and fed up with the herring bone pattern caused by the chroma signal. Somehow the conversation got round to the Video Toaster. Although they have worked out many of the ways to implement the PAL version, unfortunately it will not be till next year that we have any hopes of seeing it in production.

M.L.

Martin Lowe is the founder of Amiga Centre Scotland, a distributor, developer and retailer of Amiga hardware and software.

X-Windows

The keynote of Commodores presence at Siggraph was professional applications. They have not failed to realise that the ability to run X-Windows is essential for any machine that wishes to be taken seriously in the workstation market today.

X-Windows is a hardwear independent graphics window environment developed and made available by MIT. It has been adopted by every major workstation vender including Sun, Applo, Digital and IBM. X runs transparently across networks. A single X application on one terminal may be simultaneously accessing several different workstations or mainframes also running X (from various manufacturers) without the user even being aware of it.

Dale Luck (editors explanation) has now implemented X11 on the Amiga where it can run both clients and servers. In fact, he was demonstrating an Amiga where he could switch between one screen with the mono version of X, another with colour version of X and the workbench screen. As the machine was hooked up on an ethernet network some of the X applications showing were actually running on the VAX!

The mono version of X11 is shipping now: still in development are support for Dec Net, colour X11, Xlib and toolkit and display on A2410 (more on this later). The importance of X Windows for the Amiga, at this point in time, is vital to realise. As Dale says "X11 on the Amiga brings it $100,000 workstation capabilities at one fiftieth of the price."

also on show was Commodore's implementation of UNIX on the Amiga. No date for its release is available — it is really now in the hands of marketing. how many of Commodore's existing dealers could hands of marketing. how many of Commodore's existing dealers could support UNIX? When I spoke to Johann George, one of the developers of UNIX on the Amiga, he did mention the release will include support for TCP/IP and X Windows.



UltraCard

Is hypertext processing the wave of the future? Paul Andreas Overaa reviews the latest interactive wonder from America

Picture the WorkBench screen, window open and icons on display, and pretend that you could add IFF graphics (brushes etc.) anywhere you wanted. Now imagine that those icons can not only open other windows and run other projects but can own lots of windows, can collect data from you, can save, modify, use or send that data to other programs or even send data and messages to other icons in other similar windows.

Now, stop calling them 'icons' and just regard them as objects present in a display that you have created. These objects have two basic characteristics: firstly, you, the user, has to define the properties which these objects will have. Secondly, you specify a set of actions that will be associated with that object using a high-level script language. In other words those objects have 'high-level user programmability'. What sort of objects are best to use? Gadgets, data entry fields, multi-line fields, text, imported IFF graphics and more! Anything else? You also have hypertext facilities for displayed text, so that keywords in a piece of text also become 'programmable' and able to perform particular actions.

Return to the ordinary WorkBench window for a moment... to the user it appears single layered, almost like a blank sheet of paper which has get a selection of icons drawn onto it. Instead of this arrangement, imagine the four layer scheme shown in figure 1 which supports both foreground and backdrop displays each of which can have its own objects present.

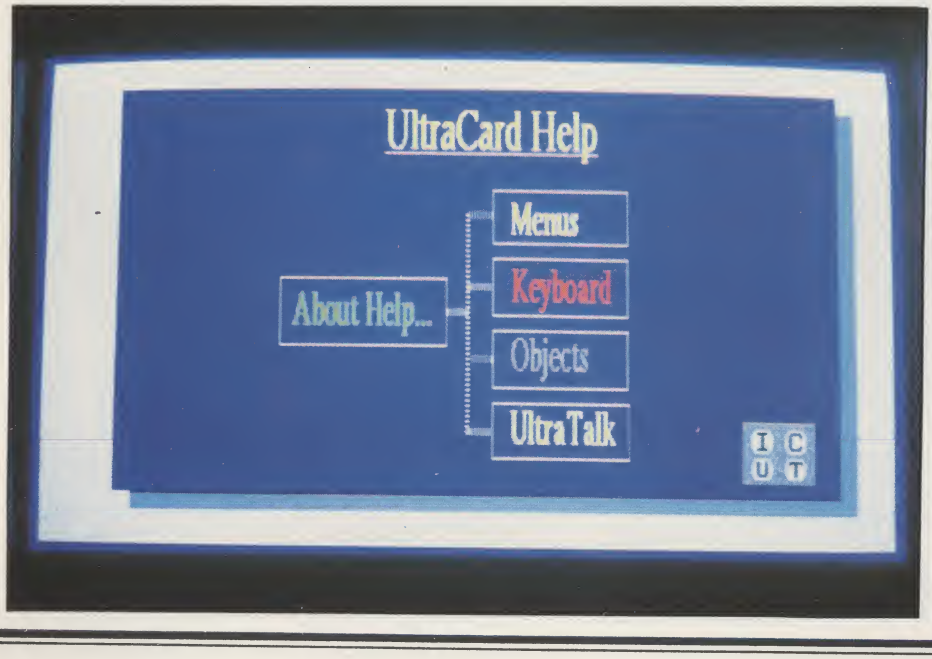


User sees all four planes

V

----- objects in foreground -----
-------- foreground ----------
----- objects in background -----
--------- background ----------

Figure 1: UltraCard's Multilayer screen arrangement



Lastly, with the addition of object-orientated facilities into the multi-layered screen, SuperWorkBench window is a single example in an environment which supports a whole collection of such object-orientated applications. What is the end result? On the Amiga, it is a program called UltraCard.

UltraCard Defined

UltraCard is called a Multi-tasking Information Construction Set. Developed by Intuitive Technologies and has been written by Mike Lehman. Sure, it's a program, but it is far more than that - it is a package which embodies many ideas drawn from the phillosophy of OOPs (object orientated programming), and languages like Smalltalk. Hypercard, which runs on the Macintosh, has similar roots and has

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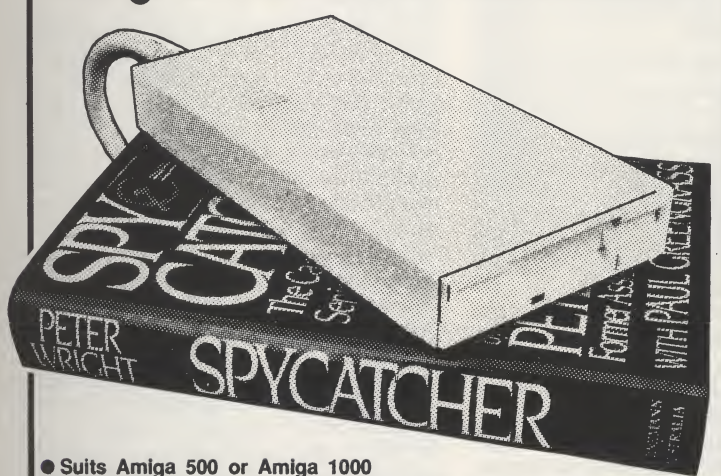
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proved immensely popular with users.

The multi-layer window arrangement upon which you define your objects is called an UltraCard 'frame'. These can contain any number of objects of varying sizes and properties. A collection of frames which constitute a particular project or application is called a 'stack'. One example that comes already defined is the 'Help Stack'. When you open this (or press the HELP key) you are able to move through a heirachy of help frames looking at the various menus displays etc. Whilst traversing this help stack a user can find out all about any menu item by clicking on it.

Each help page is a frame in the 'Help Stack' and all of the menu items which are displayed are in fact objects in the frame. As you click on those objects they all run script programs which display an explanation. Other objects in the frame move the user to alternative frames or exit from the help stack.

When UltraCard is first activated you pass through a 'Control Room', which is a sort of main menu page that allows access to programs, stacks, help etc. UltraCard operations in general can be classified into two main types: browsing; and modifying (editing). Creating and editing objects is very easy. To create an object you drag out a rectangular shape on the current frame.

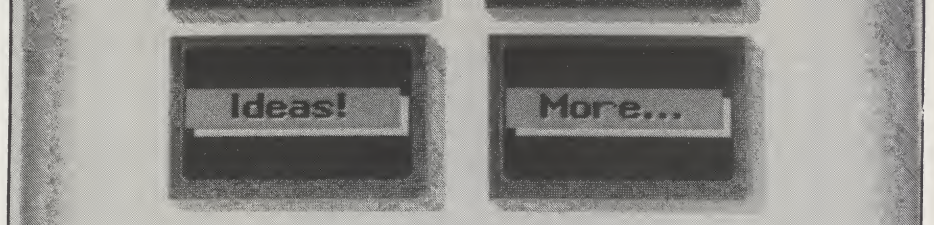
UltraCard creates an 'object' with a set of default characteristics which can then be modified via the properties and contents menus. Name, Name style, Fill and render characteristics, Drop Shadow, Outline, Shape, the objects visibility and object contents are all adjustable. To the user at least, frame creation is reminiscent of the easy-to-use object- orientated approach adopted by programs like PowerWindows.

UltraCard Creation

Attaching sets of actions to an object is almost just as easy. Select the 'Script' menu option, identify the object and you will be presented with a script editor. The script editor is then used to attach a program to the object. To make objects talk for example, you attach 'say' commands to them. For a simple example, the idea is similar to the use of macros attached to gadgets on Taurus Impex's Acquisition data-base. However, UltraCard takes the idea of a script language much further. The language is called 'UltraTalk', a line orientated 'BASICish' language which reminded me to some extent of the sort of data-base interogation languages available with most of the larger data-base programs. It allows comments, supports local and global variables, function calling, loops, tests and all of the usual arithmetic/logical/relational operators. It allows for inter- object communication and offers ARexx support !

It is hard to do UltraCard justice in one review because much of it's power will come not just from the program as such, but from the way that it will be used. Both the overall approach of the implementation and the underlying phillosophy are excellent!

The progam is potentially capable of being used for an almost limitless number of applications. For example, you could use UltraCard with interactive video, offering a front end to video disk and CD ROM applications; developing tutoring applications in schools and businesses; unattended data-base browsing (e.g. tourist and timetable information systems). Using UltraCard it will be possible to construct intelligent user interfaces that can not only pass data to and from applications hidden behind UltraCard, but can handle data verification functions as well.



Complications

UltraCard clearly has the potential to be one of the most significant programs produced for the Amiga to-date. However, it has many rough edges that need urgent attention. You can crash it far too easily by doing silly things, e.g. I was frequently able to crash it by selecting the 'delete frames' option where no more frames exist, by asking to load an IFF file and then selecting a file which wasn't an IFF file, etc. A couple of times, it Guru'ed for reasons which I never discovered!

Manual niggles are possibly far less important, but for what it is worth, I think the UltraCard manual is awful. Half of it is blank space and half of the remaining material tells you nothing at all. I think it will find favour with the non-technical user brigade, with programming novices, or with the users who will want to use the UltraCard environment as a vehicle for building integrated applications - the latter group will ask a million questions and find little in the way of answers!

To be fair, the UltraCard manual does point out that the bulk of the information about UltraCard is in the Manual, the Tutorial, and the Help stacks which are included on the UltraCard disk. But, to be honest I was still left with many unanswered questions. I found the whole situation 'uncomfortable' because of this sort of occurence. The moment you call for on-screen help or a look at the on-line manual, you loose sight of the area with which you are working with. That means whilst you are trying to figure out what to do, you can't see the display or menu details that prompted you to ask for help in the first place.

On-line help like this is a nice extra, but for me at least it is no substitute for a well written manual. (Note: apparently there is extra documentation and software available separately for UltraCard, a sort of 'programmer's toolkit', but this was not supplied with the review package.)

Conclusion

Over the last several years, two pieces of Amiga software have made a special impression on me, not because of what they were, but because of what they could have been. Each product was inovative, powerful and could have been a market leader. one was Acquisition the conceptually brilliant relational data-base product from Taurus Impex, the other was the Amiga's one and only expert system shell, Magellan, from Emerald Intelligence. Both appeared to suffer from flaws in early releases that should not have been present!

UltraCard from Intuitive Technologies has made the same impression on me that Acquisition and Magellan made. It is a brilliant and enjoyable piece of hypertext software which anyone, novice or expert, "could" find enjoyable to use. I wish very much that I could also tell you it is very robust, but in its present commercial release I cannot. If Intuitive Technologies will make the needed improvements on UltraCard, we may all benefit from a hypertext processor and ride 'the wave'.

P.A.O.

Price: $50.00 (U.S. - not including shipping). Contact: Intuitive Technologies, 2700 Garden Road, Suite 6, Monterey, CA 93940.

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Music X

Paul Andreas Overaa reports on a versatile MIDI sequencing package

Music X, Microillusion's long awaited MIDI sequencer program has now arrived in the U.K. The package consists of three disks (program, utilities and an examples disk) together with a well produced manual. It'll run on anything from an un-expanded A500 upwards — so the only extras you'll need to get started are a MIDI interface and a MIDI keyboard.

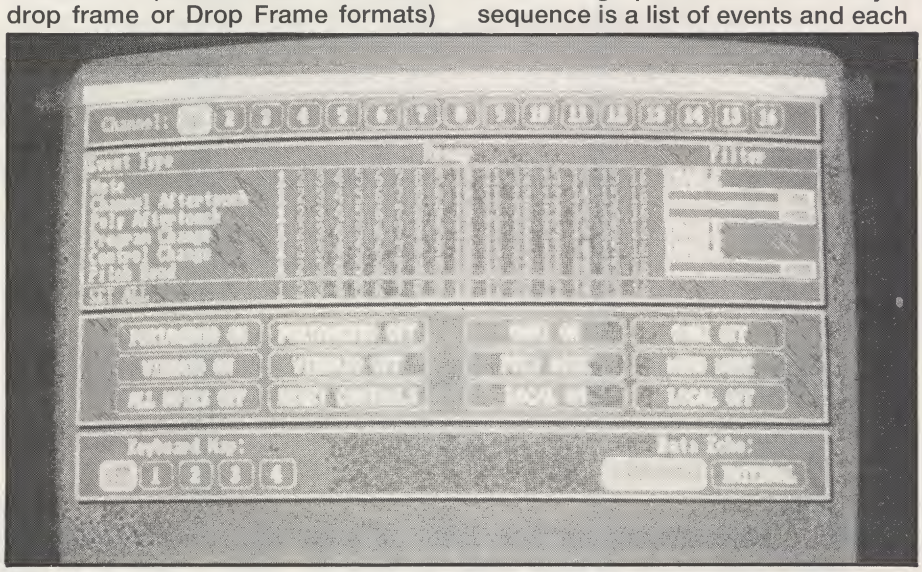
The first thing that strikes you about Music X is its versatility. As well as the usual sequencer controls it has extremely sophisticated sequence editing, some clever MIDI re-routing options, and a patch librarian. For the more advanced users it's also got SMPTE timecode support and even it's own protocol language for specialized MIDI communications.

The manual is sizeable (479 pages to be precise) but it's well laid out, has a readable introduction and offers a useful 'quick tour' guide to get you started. In short it does the difficult job of explaining a complex package very well indeed.

The Sequencer itself let s you record MIDI data in just the same sort of way as you'd use a tape-recorder to record audio sounds, but the editing/filtering/recording facilities are far more sophisticated than those you'd find on any tape machine ! We're haven't got the space to deal with all of the options present, but here's a selection to whet your appetite.....

To start with Music X, as well as being able to manipulate ordinary MIDI data, supports a range of 'internal events'..... these can be inserted into a sequence to control playing/muting/solo-ing/repeating and doing such things as dynamically altering the keyboard map, changing tempo, or modifying time signatures. There's a 'Channelizer' which globally translates, i.e. re-interprets, MIDI channel data during playback (you can also do a similar thing with input data using Music X's 'Filters' page). There's punch-in/punch-out, sequence copying and facilities which allow merging of current data with external sequences that have already been stored on disk. You can selectively extract channel data, SYSTEX messages and Music X events from a sequence writing the extracted data to new sequences.

Music X has the ability to synchronize with a number of external sources and can transmit MIDI clock and SSP (Song Position Pointer) information. The clock facilities are good.... two clocks (relative and absolute) are available and options include using the Amiga's internal video clock for driving the absolute clock, MIDI Time Code (MTC) synchronisation (24 FPS, 25 FPS, Non-drop frame or Drop Frame formats) and of course there's SMPTE reader facilities (SMPTE is a method for describing time on a hour/minute/seconds/frame basis. By using some external hardware you can write this SMPTE code on a conventional tape-recorder and so synchronize the sequencer with a 'real' tape machine — this sort of thing is done all the time in pro studios and it's catching on fast in the semi-pro MIDI sequencing world.) The Music X manual has a good explanation of the various clock options and their uses.



Anyway, back to the sequencer ! It's possible to set up multiple autolocate functions, the 'count-in' is user-definable, and you've got all the usual options for things like fast-forwarding through a sequence etc.

Twenty tracks, plus the capability for working with up to 250 sequences (memory permitting) takes a bit of organizing. Music X's approach is very good here..... at the bottom of the sequencer page is a scrollable window which provides a sequence list giving sequence-numbers, sequence-names, bar and memory sizes, time formats and details of whether controller events are present.

You'll begin to understand how big Music X is when I tell you that we haven't even started to scratch the surface yet! Sequence editing is another high-power area. Basically a sequence is a list of events and each event has a set of attributes (properties)... events play notes, send program changes, change tempo etc., and all of these characteristics are editable. Music X has two editors, a 'bar' editor and an 'event' editor. The bar editor, which got it's name because it displays events graphically using coloured bars on the display, is dead easy to use and it include options such as 'feedback' which lets you hear playable events as you reposition them. You can select, via the menu, the types of events to be displayed and this can greatly simplify the editing process. Although you can easily do all normal editing by using the bar editor another editor, an 'event editor' is also provided. With this editor you work with detailed lists of the events which are present in a

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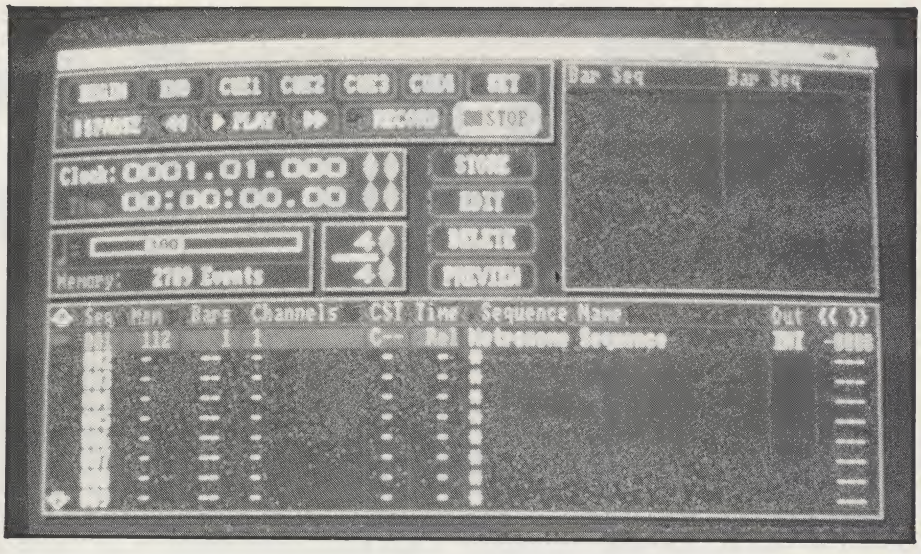
sequence and it's possible to add, remove or modify any parameter you see.

Data held in the 'edit buffer' can, incidentally, be modified by other programs or 'modules'. Three modules, for quantizing, velocity and after-touch scaling are provided and there's an open invitation for third party software suppliers (and enthusiastic users) to add to the list.

Music X's 'filters page' let's you define the type of processing which occurs before MIDI data gets to the sequencer proper and it includes some of the best message processing facilities I've ever seen. You can thin out, rechannel, echo etc., and even turn one kind of event into another type (transmute). Filter settings are saved and re-instated when performance files are saved and loaded but filter settings can also be handled individually. Four keymaps can be kept available at the same time and this allows sophisticated interpretation of the incoming MIDI data.

As well as external MIDI control, Music X can use the Amiga's sound chips. Most serious MIDI users probably won't want to get too involved with the internal Amiga sounds, but there will no doubt be some users , e.g. home users or those writing music for Amiga games etc., who'll find this option particularly useful. Sound samples are standard IFF and there's facilities for editing/envelope shaping etc. In case you're wondering.... no, you can't use IFF sounds and send data to external MIDI gear at the same time!

Next on the list comes Music X's



librarian. This allows you to set up patches for synthesizers and other pieces of MIDI gear, i.e. it's basic function is to provide the facilities for receiving, storing and sending program or other bulk MIDI data.

Music X also includes a 'Protocol' editor. Protocols, which are based on Music X's own mini-language, allow Music X to 'talk' to MIDI units. We're not talking just straight transmission and reception of bulk data here, the protocol language allows you to handle specialist messages including handshaking etc. You've got to be happy with the technicalities of MIDI for this to be of use, so it's not going to appeal to newcomers but... it'll always be there whenever you feel the time is right.

While we're talking about the more technical aspects, it's worth mentioning that Music X files are IFF format and full chunk details are provided. Also included in the Music X package are utilities for Music X/SMF and Music X/SMUS file conversion.

First impressions? Music X is both a clever, and a very comprehensive piece of software — 'all singing, all dancing' is an understatement ! It's capable of use by both beginners and professional users alike, and is one of the top three as far as Amiga sequencers go (Dr. T's KCS and Steinburg's Pro 24 being the other contenders). It's too early to say whether Amiga users will adopt it as 'the best' but one thing is already certain — it's clearly a package that must be considered by anyone who's thinking of becomming involved with sequencing on the Amiga!

P.A.O.

Price: £229.95. Contact: DigiPro Ltd., Enterprise House, Howards Grove. Tel: (0703) 703030

'Computers and Music'

(PC Publishing £7.95)

This book is yet another offering from the prolific R.A. Penfold, and he has now turned his attention to the musician wanting to come aboard the Computer/MIDI music bandwagon. In doing, he has produced a very readable and useful book.

The first half of the book is devoted almost exclusively to computers and what they can do. It is a 'completely from scratch' introduction which explains how computers work, looks at their keyboard layouts etc., and of course explains how to get data into, and out of, these beasts which are slowly taking over our lives. From time to time there is the odd diversion into topics, such as serial and parallel data transfer, where the discussions become a bit more technical but all the important 'jargon' gets explained in a sensible, orderly fashion. If you are in any way intimidated by the thought of using a computer you'll find this introductory material, on the whole, very reassuring.

The introduction to MIDI starts in chapter 5. It is easy to read and follows a fairly standard approach explaining why MIDI happened, how it works and the purposes of the various MIDI messages and modes.

Also included is a chapter on music software which deals with a range of sequencers and voice editing software. Programs such as Hollis Research's Trackman and C Lab's Notator are dealt with and, all in all, it provides a good indication of the facilities available with MIDI packages today.

A useful glossary followed by appendices dealing with hexadecimal numbers and software/sequencer checklists round off what is altogether a very adequate and well produced book.

'Computers and Music' neither aims to make you a computer genius, nor does it expect you to be one in the first place. It's been written for people who simply want to learn how to use computers to make music.

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A-Max — The Mac Emulation Arrives!

Mark Smiddy looks under the hood of Readysoft's Macintosh emulator.

Before I say anything about A-Max, let me put the record straight about emulators. The dictionary definition of the word emulate, when used in relation to computers, is: 'to make one computer behave like another (of different type) so it can use data and run programs from the alien system.' This brings up an interesting point - where is the watermark when emulation stops and copying (piracy) begins? To examine this question let me take some typical examples of emulators.

Emulating Examples

Perhaps the most famous (and best) Amiga emulator is Commodore's The

"... they all share one thing in common - the need for Macintosh ROMs (firmware) and system software."

Emulator, software designed to make any 512k Amiga behave like an Acorn BBC micro. Written entirely in native 68000 assembler, The Emulator runs an enhanced version of BBC Basic and runs a large amount of BBC BASIC and machine code programs. It can therefore be termed a 'stand-alone emulator.'

Next in line come other software based emulations like Transformer, the now defunct PC emulator for the Amiga. These can be termed hard/firmware emulators because they imitate the PC at hardware level with the addition of any on-board operating system. In order to make the system run however, you must first 'obtain' a copy of MS-DOS; since MS-DOS can be legally bought, this avoids the problem of piracy.

Finally, we come to the Macintosh emulators which have appeared over the last couple of years: Magic Sac, Aladin and Spectre 128 for the Atari ST and the most recent of all being the subject of this article, A-Max for the Amiga. I mention the others for the simple reason they all share one thing in common - the need for Macintosh ROMs (firmware) and system software.

ROMs

A-Max also requires a set of Macintosh ROMs. See the section at the end of this article on some of the complications surrounding their purchase.

Once you have managed to obtain the necessary parts, the way these emulators work becomes apparent. It seems they are not emulators at all, but merely large software patches.

How A-Max works

In order to clarify this, let us examine how A-Max works. The ROMs are installed in a board which plugs into the external disk drive socket. When A-Max runs, the first thing it does is to load the contents of the ROMs into the Amiga's memory. It modifies the RAM copy of the ROM so it works in an Amiga environment.

In order for A-Max (or any of this generation of emulators) to classify as a true emulation of a Macintosh, the manufacturers would have to produce at least a complete version of the Mac's ROM based operating system plus their own versions of Finder and System too. Apart from

" Your failure to lawfully procure the right to use such software may be a violation of law, including the copyright laws."

the obvious cost disadvantages, unlike IBM, Apple consider the ROM entry points, WIMP environment, screen fonts, and so on to be their intellectual copyright. That is, securing the ROM entry points stop the clone manufacturers right in their tracks.

Is it legal?

To gain some official views on these matters, ***AUI*** have contacted both the Federation Against Software Theft (FAST) and Apple directly. In the absence of Bob Hay, who usually fields such enquiries, a FAST spokesman told us he was not in a position to

comment.

Apple's response was less than mellow, but efficient. Their Public Relations manager, Frank O'Mahney, told us: "Apple consider such emulators to violate the copyright." Furthermore, there was no way he would contemplate granting a temporary licence to anyone - not even for evaluation purposes.

Although Mr O'Mahney declined to comment further, this brings up the following point: assuming the person or organisation, wishing to use A-Max already owns Apple Macintosh equipment, and therefore have a site licence, there is probably nothing in British copyright law from preventing them.

If you have read other reviews on A-Max and wondered why none of this has been discussed before, we can only assume the authors were either ignorant of the situation or ignored the warnings. It is our firm belief at ***AUI*** you should be brought all the facts, not just half the story. It is not our intention to encourage readers to buy products which may cause them to violate the law.

In the end, the final word belongs to Readysoft. Their documentation for A-Max states: *"You acknowledge that the use of A- Max requires the use of software that is the property of others, including Apple Computer, Inc.. The use of A-Max will require you to procure the right to use such software from Apple Computer, Inc. and/or other interested parties. Your failure to lawfully procure the right to use such software may be a violation of law, including the copyright laws. ReadySoft Inc. makes no representations concerning the availability or cost of obtaining such rights."*

Putting A-Max to the test

Putting all this aside for now, let us examine A-Max to discover if all the fuss is necessary. What I mean by that is: does A-Max represent any threat to sales of the real Apple Macintosh? Always remembering of course, while the Macintosh is considerably more costly than the Amiga, no emulation can ever support all the features present in hardware.

A-Max is supplied in the form of a cartridge 'ROM carrier' with additional software on two disks; it is this ROM carrier which is likely to cause the major legal sticking point. By the removal of three screws you can gain access to the inside of the unit and install the two (expensive) Mac ROMs into the sockets provided.

The ROMs can be installed in any order, but, they must be the right way up. The remainder of the double-sided PWB contains some discrete components and four cheap 74LS series ICs. To be exact: a dual, 1 of 4 decoder; an 8 bit serial/parallel in, serial out shift register; and two, dual 4 bit binary ripple counters. An average electronics enthusiast could make one and still get change from £15.



The most difficult part of the installation is putting the whole thing back together. On the version supplied, I spent several minutes trying to get the screws to locate with the pillars inside the case - due to some over-large guidance holes and short pillars. It is interesting to note the author of A-Max, Simon Douglas, and two of his conspirators have signed the inside of the case; — *a la Amiga 1000!*

Once assembled, the cartridge plugs into either the disk drive port at the rear of the Amiga or into the pass-thru at the rear of your second disk drive. For most purposes, it will be more convenient to plug A-Max into the pass-thru. However, some disk drives do not pass power to the rear connector. Here it will be necessary to connect A-Max to the Amiga and the offending drive to the A-Max pass-thru.

Software support

You must also obtain the appropriate Macintosh system software, System and Finder. If you already have access to Macintosh equipment, as we did for this review, this does not pose much of a problem. All you have to do is borrow (or buy) an external Macintosh disk drive, plug it into the A-Max board and away you go. The reason for this is the Mac uses variable speed drives and these write a special format which the Amiga cannot read.

On the other hand, if you belong to the vast majority of Amiga owners who do not have direct access to a Macintosh, the problem is more tricky. It can be solved in three ways: by obtaining a system disk from one of the Atari Mac emulators, Magic Sac or Spectre; by using a mini-transfer disk or by purchasing the software from a licensed dealer (it costs abut £35.00 + VAT). The mini-transfer disk is A-Max's technique for obtaining system disks - and other bona fide Mac software - without requiring a Macintosh drive.

This is how it works. The mini-transfer software is supplied on the A-Max utilities' disk, which itself is a dual format A-Max/Macintosh disk. The transfer is completed in two stages: first, the disk is formatted on the Mac half Macintosh/half A-Max; next, the files to be transferred are copied into the Mac part of the disk. Finally, the software copies the Mac files from the Mac format part of the disk to the A-Max format part.

Always assuming you do manage to get the appropriate software - for reasons already outlined, you might as well forget licences - the next step is to boot A-Max. This can be done from either Workbench or CLI, although Workbench is simpler and more convenient.

Getting started

As the program starts, it remains in Amiga mode while the configuration

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continued from page 27

options are set. This avoids the problem of having to configure A-Max separately from a 'Config' program as used by Aladin, for example.

Of the options available many - serial/parallel port settings for instance - are best unchanged, unless you have a reason to do so. If you have extra memory, an A501 perhaps, this can be switched out and used as a RAM disk. Even if this memory is left available for A-Max, some Macintosh applications will not be able to access it anyway. The remedy for this is a complex modification to the Amiga's PWB which is detailed in the manual.

The most interesting options lie in the screen setup. Here you can decide upon a full screen 640 x 512 (PAL) or a Mac sized screen 512 x 342. Part of the beauty of the Mac system is properly written software can take advantage of the whole screen. Some applications, games mainly, cannot, and behave best with a standard Mac configuration.

In any of these modes however, it is necessary to set the Amiga into interlace mode which causes the notoriously unusable flickering display on most monitors. Nevertheless, A-Max does support the enhanced chip set (ECS) which is capable of a flicker free high resolution display. It even supports the Commodore A2024 (aka Viking Moniterm) full page monitor. As yet though, these are hardly practicable options for the average Amiga owner. For the rest of us, A-Max supports some scrolling/paged low resolution modes which totally subvert the idea behind the Mac's display.

During our tests we stuck firmly to Public domain and Shareware software like the 'Red Ryder' communications package and games like Banzai! On the face of it, A-Max seems very well behaved. As regards commercial software, we have seen the A-Max prototype running Microsoft Word, and have assurances that advanced programs like Hypercard will run with the 128k ROMs from a Macintosh Plus. However, software that uses some of the Mac's hardware facilities directly, such as a MIDI applications or anything which makes use of the Mac's custom sound system, will not. Sound support at the moment is minimal.

Conclusion

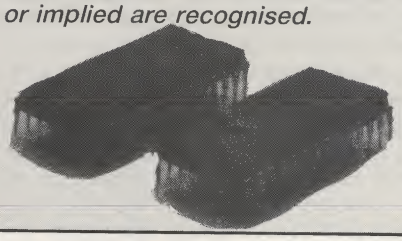
It is up to you to decide whether A-Max is worth all the time and trouble involved. Unless you have the enhanced chip set, a flicker fixer or similar monitor, the display is almost unusable. The paged and scrolling solutions devised by Mr Douglas for running A-Max in non-interlaced formats are pleasant but remain too fiddly to be at all useful.

In the final reckoning, with all of the trouble involved in putting a system together, it may deter many users from getting their Apple-a-day in this fashion.

M.S.

Price: £134.95 (without ROMS), £249.95 (with ROMS). Contact: Entertainment International, Unit 4, Stannets, Laindon North Trade Centre, Basildon, Essex SS15 6DJ. Tel: (0268) 541126.

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Mac ROMs and copyright laws

Nancy Picard reports on the legality, or lack thereof, of A- Max.

In Appleland, there has always been a contingent of solicitors on the watch for any type of Apple emulators, clones, and such like. Whether they are protecting the Apple copyright regarding the Apple logo or the Apple ROMS, official statements from the company have been strongly worded and strictly enforced using legal measures.

The legal problem of using A-Max seems to be that when you use 100 per cent Apple ROMs, in conjunction with Apple System software, without Apple's consent, you may break copyright law. Readysoft's disclaimer makes a note of this. Mark Smiddy asked Apple for consent even to review the software, and as reported earlier in the story, the company replied that no consent is given, ever.

'Personally, I like the product,' Mark told me as we discussed his legal position. 'Professionally, I don't.'

According to Geoffrey Clemens, manager of Apple dealer Second City Systems, Ltd. of Birmingham, Apple will not sell ROMs without the complete board assembly; it is illegal, therefore, for dealers to sell 100 per cent Macintosh ROMs. However, according to Clemens, you can purchase copies of ROMs that have had slight modifications. 'There are plenty of ways around the copyright,' Clemens told ***AUI****. 'And, there are people who sell copies,' he said.*

Was Mark breaking the law in order to review A-Max? What if instead of using 100 per cent Apple ROMS, he used copies? At the time of going to press, we still could not determine if copies of ROMs are illegal, or if the majority of ROMs being sold today are Apple ROMs or copies. We will make a full report in ***AUI*** *in the future.*

If you have decided to purchase A-Max, getting the ROMs is somewhat of a tricky business unless you do decide to purchase ROMs from Entertainment International. They seem to have plenty of them. 'Seventy percent of our sales purchase the ROMS as well,' an Entertainment International spokesperson told ***AUI****. He also stated that most users already have Macs, and use A-Max in order to have 'a second Macintosh.'*

We asked EI if the ROMS they supply with A-Max are 100 per cent Apple ROMs or if they were 'legal' (this point is still in contention) copies. EI purchase their ROMs from Hi Soft, a company located in America, and who have reportedly had no legal problems selling the ROMs. Nor does Readysoft or EI report any problems with selling either A-Max with or without ROMs.

After all of this confusion, what is the bottom line? The illegality may occur when the user puts the ROMs, the System software, and the drive into use. Assuming that no one purchases A-Max as a piece of modern art to admire, we know that this occurs. Mark used the system to write the review.

And, as Mark reported, A-Max does what it purports to do - that is, to allow you to run Mac software on your Amiga. In future months, we will continue to test popular Mac commercial programs and to report on their effectiveness on the Amiga.

It seems, therefore, to be more of a moral issue than a legal issue if you decide to buy and to use A-Max. Even if you are breaking the law to use A-Max, the chances that Apple will 'catch you,' are slim to none. Readysoft is not liabel and EI is not liabel. Mark thinks that because A-Max is a patch and creates ***the potential*** *for use of copyrighted software and hardware without the owner's consent, it is overpriced and, frankly, somewhat immoral. It is up to you, reader, to decide.*

N.P.

DTP/WP Round Up

The business of being an Amiga user is complicated by choices. John Walker and Peter Lee team up to provide you a comprehensive overview of the latest offerings. First, DTP...

The Amiga now has five DTP programs: Shakespeare, Publisher Plus, Pagestream, Professional Page and City Desk. *AUI* has reviewed Shakespeare, Publisher Plus and Professional Page. For purposes of this review we will look at the new contenders. My Lords, ladies and gentlemen. This is a 12 round desktop publishing punch-up between the two challengers to Professional Page as the reigning Amiga DTP heavyweight champion. In the blue corner, weighing in on four disks and a 152-page manual is City Desk 2.0. In the red corner, coming in on a trim two disks and a 215-page manual is PageStream 1.6. Let battle commence!

But, first, a word about the two contenders. City Desk was one of the first DTP programs for the Amiga, but lost out in those early days to Gold Disk's PageSetter. City Desk was rougher and suffered from its poor text editing facilities and its reliance on embedded commands in the text to control most aspects of its typesetting and formatting. It's now trying to make a comeback with a slicker program packing a far bigger punch. Its disks contain the program plus dot-matrix, PostScript and LaserJet fonts, two utilities, including DirUtil5, a mouse-controlled substitute for the CLI (Command Line Interface) and some clip art.

PageStream is the newest challenger, although somewhat slow in reaching the public. It was first advertised more than a year ago. It promised much, but its first appearance was a disaster - it had more bugs than America's Moscow Embassy. Hence the rapidly proliferating versions; by the time you read this it should have reached at least version 1.8 (and, probably, still counting). Its two disks contain the program and Pagestream's proprietary fonts and printer drivers.

PageStream is the leaner program. It will run on a 512K Amiga with a single disk drive, while City Desk requires a minimum of a megabyte. But with 512K you won't be able to do much with PageStream. You will be limited to documents of no more than two pages or so. Both work best with at least 1 Mbyte and two disk drives.
Back to the contest.

Round One: Manuals

City Desk is ahead by a small margin, although both are confusing. City Desk's has been completely rewritten, but still requires a great deal of turning back and forth through the pages to understand.

PageStream's manual fails to cover all aspects of the program. For example, the requester that pops up on screen when you wish to edit the co-ordinates of a bitmap graphic has spaces for you to enter the screen angle and screen frequency when scaling the graphic. What are they? The manual passes over them with the statement "for additional information, read the discussion of this in the reference section". But the reference section contains not a word about them. (For best results with a laser printer, the angle should be 45 degrees and the frequency between 60-70.)

Likewise, a tutorial in the manual claims that you can group several objects on a page together and move them as one by entering new co-ordinates. Try it, and the program tells you it cannot be done.

Round Two: User Interface

PageStream edges ahead. Both use a similar and familiar display: a page or pages that can be shown at various magnifications with a tool-box, providing access to the most-used functions, down the right-hand side of the screen, and a menu-bar across the top. Both allow more than one document to be open at a time. Both will show facing pages, which is a great asset when designing layouts. City Desk goes even further by letting you have on screen as many pages as your memory will allow.

Both programs include automatic routines to transfer the programs to a hard disk, but both are likely to need some customising by the user. With PageStream, you need to tell the program where to find graphics, fonts, and printer drivers. City Desk has only one printer driver in its Preferences - for a 9-pin Epson - so that you may have to transfer the driver you want from one of its data disks before you can use the program.

PageStream offers a choice of menus or keyboard equivalents to access its options. City Desk also provides menus, most of which have keyboard equivalents. But you still need to use embedded commands in the text to set such things as leading, or line and paragraph spacing.

I found it necessary to run both programs from the CLI. When I clicked on the disk icon for City Desk, for some reason no window opened so that I had no alternative but to use the CLI. If PageStream is loaded from the Workbench it comes up in its default interlaced display. According to the manual you can alter this by changing the tool types in the Workbench's Info screen, but this function did not work. From the CLI, though, you can customise it to your needs.

Round Three: Grid and Ruler Handling

Grids provide a guide for layouts and also have "snap to" functions so that text and graphics will be fixed automatically to their intersections. A ruler along the top and down the side of a page is also an invaluable guide to placing text and graphics.

Both programs have user-definable and snap-to grids to help arrange your layout.But CityDesk has no on-screen ruler, relying instead on co-ordinates on screen to provide a guide to your position. Grid measurements can be set in inches only.

PageStream has on-screen rulers which can be defined in nine different units, including such continental typographical measurements as ciceros and didot points. That puts it well ahead on

points.

Round Four: Page Handling

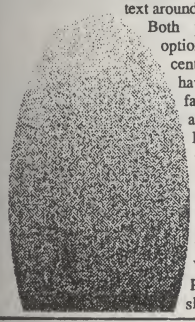
City Desk falls down badly here. You have no choice of page size, but are limited to working on an 8.5 x 11 inch page, which is a crippling restriction. You don't even get the choice of having the page in a landscape or a portrait orientation.

PageStream, on the other hand, has nine predefined sizes from business card (3.5 x 2 inches) to Tabloid (11 x 17 inches). You can also define your own page size in any dimensions from 1 x 1 inches to 18 x 18 inches. Both programs let you set up master pages for odd or even-numbered pages and have automatic page numbering.

Round Five: Text Handling

A win for City Desk, which can import text from WordPerfect, Scribble!, Notepad and as an ASCII file. PageStream provides only two alternatives: it can bring in text either a WordPerfect file or as a straight ASCII file, which means that it won't import typestyles such as italic or bold. Both can link columns so that text flows automatically from one to another. And both will flow text around graphics, although PageStream's method is clumsier. City Desk scores as the first Amiga DTP program that will flow text around irregularly-shaped graphics.

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Both provide the usual justification options - text set flush left, flush right, centred or fully justified - and also have hyphenation and kerning facilities to improve the printed appearance of a document.
Round Six: Text Editing
City Desk has a separate text editor which pops up in a resizeable window, which makes changing or entering text quick and easy, since the editor is not WYSIWIG (What You See Is What You Get).
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PageStream's text-editing is slower, since you enter words directly on to a page. Both programs have basic text editing functions: cut, copy, paste and search and replace, with or without a query. But PageStream's search and replace is far more sophisticated, allowing the use of wild cards, which gives it greater flexibility. And PageStream also has a spell-checker, although its dictionary is, of course, American. But you can add new words to it. Another win for PageStream.

Round Seven: Type and Typesetting

PageStream's greatest asset - and its biggest drawback - is its system of scaleable outline fonts. These are defined mathematically, rather than being standard bitmapped fonts, in much the same way that PostScript fonts are. This results, when using a dot-matrix or ink-jet printer, in a high quality output with no disfiguring jaggies. Its output is the best I have seen from a dot matrix printer.

One drawback is that you can only use PageStream's own fonts. Ten are supplied. Two are versions of the most ubiquitous of all DTP typefaces: Tyme, which is the equivalent of Times Roman,and Helv, which is a Helvetica look-alike. The other eight are more exotic and, for that reason, need careful handling to produce good-looking results.

PageStream's fonts are extremely flexible. They can be used at almost any size, from 1/50th of a point to 1,310 points, which is 18.5 inches high. Besides the usual italic and bold, you can use the fonts in the following styles: backslant, underline, underline twice, light, mirror, upside down, outline, reversed (white on black), shadow and strike-through, which can be useful for those using the program to print variations on standard contracts. Superscript and subscript are quickly created and you can make a block of text all uppercase, lowercase, or capitalised at the click of a mouse button.

A bigger problem is that its outline fonts are a nuisance for users of PostScript-compatible laser printers. PageStream provides no method of accessing the higher-quality fonts that a laser printer holds in ROM and which conform to long-established standards. Those who want to output a PageStream document to an imagesetter (such as a Linotronic) could find themselves in difficulties, since it will not hold any equivalents of the PageStream fonts. You'll need to download them, with unpredictable results.

It is ridiculous of Soft-Logik to produce a PostScript compatible program and then provide no means of accessing built-in PostScript fonts.

City Desk provides one typeface optimised for use with 24-pin dot matrix printers. Otherwise, it relies on the Amiga's bitmapped fonts for dot matrix printing. Hard copy looked good, but not as good as PageStream. When used with a PostScript compatible printer, City Desk allows you to use PostScript fonts (version 47), which can be in roman, italic, bold, or underlined. Strangely, Zapf Dingbats, that invaluable collection of symbols, is not included in its otherwise standard collection of these fonts.

City Desk supplies PostScript and LaserJet fonts in two sizes only - 10 point and 24 point. When you need other sizes, you'll have to create them in advance using a utility provided. City Desk's reliance on embedded commands to control text formatting is a clumsy system. To change the leading in City Desk, for instance, you have to choose the edit option from the toolbox menu, click on the text, which then appears in the text editor, enter your alterations, click on the text editor's close button, and then click on the text box.

PageStream's requesters for setting character, word and line spacing and other formatting commands are a delight. You can actually see the results of your actions on text within the requester. It's the best system I've seen on any DTP program for any computer. A win for PageStream.

Round Eight: Colour

A crushing round for PageStream, since City Desk is strictly a monochrome program. Both have their limitations - neither program can handle HAM graphics. With PageStream, though, you can use 16 colour graphics and have up to 256 different shades of colour in one document. It will also print four colour or spot (mechanical) separations for output on high qyality imagesetters. But the manual provides little help on the best way to achieve this. PageStream's colour facilities do not always work as they should.

City Desk converts colour graphics into 16 shades of grey and can handle images with up to 64 colours.

Round Nine: Graphics Handling

A close fought draw. PageStream scores because it allows you to use both bitmapped and structured, or object-oriented, graphics. A drawback is that the structured graphics can be imported only from Aegis Draw Plus. The program is not compatible either with Gold Disk's Professional Draw or Structured Clip Art.

Using PageStream's toolbox, you can draw rectangles, round-cornered boxes, lines, circles, ellipses, arcs, polygons and freehand. Lines can be customised and drawn in many predefined different styles and can be up to 7 points wide. There are 40 different bitmapped fill patterns and you can also create your own patterns. It's a pity, though, that PostScript fills are not available.

A major problem here is its lack of

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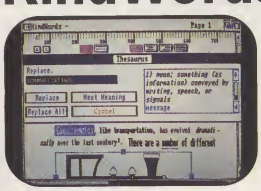
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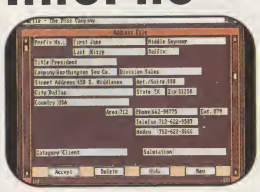
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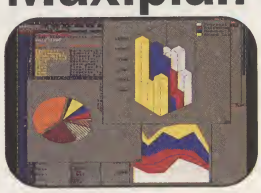
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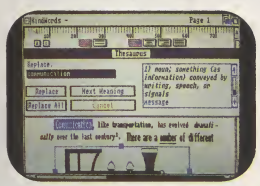
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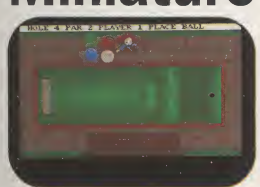
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speed. Pagestream took 90 seconds to load an image, another 27 seconds to rescale it, and as long again to redraw it when the viewing size of the page was changed.

In comparison, City Desk took 15 seconds to load the same image and 3 seconds to rescale it. City Desk's graphics handling is much improved and it will print digitised photographs correctly - though it did produce a negative version of one digitised image that I loaded, which I then had to invert in its graphics editor. Its graphics editor allows you to draw lines, circles and boxes and to define brushes, which can then be flipped and rotated. But it has no fill patterns, other than shades of grey, and its line styles are limited.

Round Ten: Printing

Both produce good results. But PageStream wins again - unless you are using a PostScript compatible printer, when you will be frustrated by the fact that the program won't let you use the printer's superior built-in fonts. PageStream supplies its own printer drivers for many dot matrix and ink jet printers or gives you the option of using the Workbench's 1.3 drivers. It also allows you to output to Hewlett-Packard's LaserJet.

City Desk relies on the Amiga's 1.3 printer drivers for its dot-matrix and inkjet printing. You can also output to a PostScript-compatible or a LaserJet printer. An annoying feature is that if you want to change your printer from within the program, you lose all the pages of the document you are working on, which means that you must save it first and then reload it.

You can print a range of pages from City Desk with as many copies as you need. But its PostScript printing lacks sophistication - you can't rotate, reduce or increase the size of its pages.

PageStream allows you not only to rescale and rotate pages, but to print large pages - or, more likely, posters - since it uses tiling: printing your graphic or document in sections on a sequence of pages. It will also collate the pages of multiple copies of a document as it prints.

Round Eleven: Macros

Another victory for PageStream, which is the first Amiga DTP program to provide style-sheets and tagging. With a style sheet you can predefine the type, its style, size and leading and save the definition. Thus you can create styles for headlines, sub-headings and body-text of a document. Once this is done you can tag sections of the text and they will be automatically formatted in the predefined style.

City Desk has nothing so sophisticated. But you can set up 10 macros using the function keys so that its embedded type-setting commands can be entered painlessly.

Round Twelve: Reliability

City Desk is a well-behaved, though memory-hungry, program. Here PageStream nearly knocks itself out of contention. Bugs still lurk in its darker recesses. Most vulnerable is its variable zoom magnification which, more often than not, brings a call from the Guru whenever it is used. (I'm told the flaw is specific to the PAL versions of the program.)

In eight hours' continuous use, PageStream collapsed on me ten times. Bugs that I could identify were:

- Colour palette disappearing and not functioning correctly.
- Changing the colour of a group of objects on the page sometimes caused problems.
- Rotation of more than one object on a page produces unpredictable results. Some objects will be horrendously displaced.
- The cursor has a tendency to vanish occasionally.
- Once you near the limits of your memory, the program is likely to give you a warning and then crash immediately after.

So what's the verdict? City Desk 2.0 is a good, steady program capable of producing excellent results. I find its use of embedded commands for text formatting clumsy and slow. Its separate text and graphics editors are easier to use than PageStream's method of editing on the page. It is now a better DTP program than PageSetter (now bundled as part of the bargain Publisher's Choice), if you can accept the limitation of only one page size. It is also cheaper than PageStream, but it cannot match the quality of its output.

PageStream is definitely championship material. It can provide superb output from dot matrix or inkjet printers, thanks to its excellent scaleable outline fonts. Its ability to rotate and distort text and graphics is very impressive. Its use of style sheets and tagging is a great time saver. It handles graphics well, although it's a pity its structured graphics can only be imported from the CAD program Aegis Draw Plus.

But, at the moment, PageStream is not a stable program. Its bugs are getting fewer, but enough remain to make producing finished work a risky business - unless you save your work very often it's likely to disappear up a Guru meditation. Once its bugs have been dealt with - and they may have been by the time you read this - it will be a winner.

At the top end of the DTP business, though, its failure to exploit a PostScript-compatible laser printer's built-in fonts is a serious disadvantage and one that still makes Gold Disk's Professional Page a preferable program. The latest 1.2 version of Professional Page also has superior colour separation facilities.

For colour printing from dot-matrix or inkjet printers, PageStream will provide the best output. Those with not so deep pockets will find ProWrite or Kind Words possible alternatives, although they are word processors rather than desktop publishing programs.

But if you want to reproduce HAM graphics with their 4096 colours in your DTP documents then Professional Page is the only answer.

For monochrome output to dot-matrix and inkjet printers, PageStream is again better than the opposition. City Desk, though, is worth considering, particularly when it releases more fonts optimised for 24-pin printers. Professional Page does not work well with dot-matrix printers and you need to use an unfriendly utility to create special fonts that are compatible with the program.

For PostScript output, Professional Page is still the best, although it lacks the many of the facilities of PageStream - the style sheets and tagging, the macros, and the rotation and distortion of text and graphics.

But Professional Page is supported by some helpful utilities - Structured Clip Art, Templates for adverts and newsletters, and is compatible with Professional Draw, the first structured drawing package for the Amiga.

PageStream's PostScript output is good but too many of its fonts are eccentric, ranging from mock-oriental to heavily shadowed 3D fonts. They're fine for special effects, but not so good for everyday use.

PageSetter and LaserScript, its versatile PostScript driver, are included, along with KindWords and some clip art, in a bargain package of Publisher's Choice, which may be the best buy for the impoverished. City Desk 2.0, though, will give more polished results. But it lacks the dazzle of PageStream and the competence of Professional Page.

Once Soft-Logik has sorted out the problems with PageStream - and provided access to standard PostScript fonts - the program should rank among the best DTP programs available.

It will be interesting to see how Gold Disk responds to the challenge, with its long-promised enhanced Professional Page. One thing is clear: the Amiga DTP scene is heating up - to the benefit to all users.

J.W.

Prices: City Desk, £87.00 (approximately); Pagestream, £171.35 (including VAT). Contact: City Desk, any mail order/retail shop; Pagestream, Silica Shop Ltd., 1-4 The Mews, Hatherly Rd., Sidcup, Kent, DA14 4DX. Tel (01) 309 1111.

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Lay It On The Line!

Is the pen truly mightier than the sword? Peter Lee cuts through the verbiage to find the ultimate WP ...

Word processors were among the very first tools to spill out of the office and into home computing. This is not surprising when you consider they were probably replacing a gnarled typewriter and a bottle of correction fluid.

What is surprising is that they have evolved into so many forms; the early days of simple text editors have long vanished, and word processors are among the most sophisticated and hardest-working tools for many home computer users.

On the Amiga they fall into two main categories: text-only, or with graphic capabilities. This last concept takes us into the realm of desktop publishing, more of which later.

Background

The idea behind word processing is flexibility — the ability to manipulate your words and configure your document to your heart's content, passing it to the printer only when you're happy. All word processing programs allow this kind of editing, but many come equipped with far more facilities.

These regularly include a spelling checker, which will point out any unrecognised words in your work, offering suggestions for replacements. Many top programs also include a thesaurus — something to help in finding the particular bon mot which may have eluded you.

The more sophisticated software feature facilities to mailmerge — which allows you to write a document once, and personalise it according to information kept in a names and addresses database, printing out as many individual copies as you like (very much like the junk mail you throw away!).

Software

There are many robust and very workmanlike word processors on the market — developers long-since realised their importance. Two in particular spring to mind for no-frills, full-feature text editing — Transcript (Gold Disk), and one of the founding fathers on the Amiga — Scribble (Micro Systems Software).

This duo are so uncluttered by frills, so esy to master and such a pleasure to work with, they can be considered virtually idiot-proof.

CBM's own program, Textcraft, has rather been left standing, though it has a use in cultivating an awareness of the genre among novices. moving up the price range is Protext (amor), which through its speed and professional nature has earned it a large (and devoted) following.

The giant in the word processing field is Word Perfect, a mammoth of a program which leaves no pebble unturned in terms of facilities, but which requires a big investment in terms of money, and time in getting to know how the many features operate. Word Perfect (Word Perfect Corp.) is undoubtedly THE best text editing program for the Amiga, but learning how to use it is like trying to learn another language. But it does have an edge in that many users will have the same program running at the office on the PC, so it makes for a smooth ride when there is home work to be done.

DTP

But if you want to get into the real world of Desktop Publishing, you need to look at the graphic word processors, which have boomed for two very good reasons — the Amiga's superb graphic capabilities, and users' need to present ideas in a professional, eye-catching way.

In the main, this kind of word processor includes all the features of the text-only models, and some also have spelling dictionaries and a thesaurus, but have the added attraction of supporting bit-mapped graphics — art screens from the like of DeluxePaint, or digitised pictures.

In theory this means you can create magazine-type pages, with illustrations, captions and text in varying sizes from headlines to small body text. In practice you may find your ideas stillborn by a program's unfulfilled promise. Nowhere does it pay more to shop around than in the field of graphic word processors.

At the budget end of the market come Kindwords 2 (The Disc Company), which is a good starting point and which gives excellent printouts on a humble dot matrix printr. Visawrite (Visa Software) is more expensive, and is as good as you can get in the sub £100 range, but it still leaves a lot to be desired.

Many users have a high regard for Excellence! (Micro Systems Software), and its price certainly puts it in the professional bracket. packed with features, it is the big brother to Scribble, and through lack of realistic competition is probably the current leader of the pack.

Printing

Finally the crunch: a standard budget 9-pin dot-matrix printer is capable of printing out text to a good standard, but graphic word processors, which in effect use bitmapped graphic screens and then dump them to the printer as you would from within an art package, requires more sophisticated hardware. Twenty-four pin printers offer a good compromise, provided of course you can get an Amiga driver to control them — check first! — and so do inkjets, but this increases your outlay considerably.

The ultimate output is achieved from a laser printer — ultimate for quality AND price, unfortunately. Some word processors support Postscript printing, which is emerging as an industry standard, so if you have access to a laser printer (perhaps at a professional print shop) you may like to consider this option. Also, as colour begins to play a more important role in DTP, you may find a need to invest in a colour printer.

P.L.

**** For details of printers, word processing software prices and added information, consult our publication The Directory!, which gives a comprehensive listing of Amiga products and their use. But before buying a word processor, check your needs, examine the competition, and above all test out the product.***

Add It Up!

Some of the accounting and data-base programs for the ultra-organised...

Let's be honest. When the Amiga first came out, no one gasped at all of the pretty colours and exclaimed, "Wow – I could create a fantastic spreadsheet with this!" or "I just can't wait to play sampled Beethoven music *and* mailmerge at the same time."

However, as we all know, those things are possible – and in business applications, quite desirable. Graphs, slideshows, and charts are all within the grasp of serious-minded professionals, and there are many compilations of programs as well as those that are sold separately. Below is a list of spreadsheets, accounting and database packages for your favourite machine.

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PRODUCT	SOURCE	PRICE
ACCOUNTS PAYABLE *Small business accounts package*	PANMEAD LTD.	£51.75
ACCOUNTS RECEIVABLE *Prints and reports statements*	PANMEAD LTD.	£51.75
BUSINESSWARE ACCOUNTS *Invoicing, sales ledger and stock control*	PANMEAD LTD.	£129.95
DESKTOP BUDGET *Personalised money management system*	GOLD DISK	£POA
FINANCIAL COOKBOOK *The recipe for success!*	ELECTRONIC ARTS	£343.85
GENERAL LEDGER *Small business general ledger*	PANMEAD LTD.	£51.85
HOME ACCOUNTS *Useful package to keep track of personal spending*	DIGITA INT.	£29.95
INVENTORY CONTROL *Inventory system*	PANMEAD LTD.	£51.75
INVOICE AND SALES LEDGER *Produces invoices/credit notes*	PANMEAD LTD.	£51.85
SMALL BUSINESS ACC. *Cash book system*	EQUINOX	£80.44
SMALL BUSINESS ACC. + *More powerful ledger than cheaper version*	EQUINOX	£137.94

SPREADSHEETS

PRODUCT	GRAPHICS	COLUMNS/ROWS	PRICE	SOURCE
ANALYSE 2 *Now bundled as part of the works*	YES	CWM	£49.95	MICRO SYSTEMS
FLIPSIDE *Prints Spreadsheets of unlimited size!*	NO	N/A	£59.99	MICRO SYSTEMS
K-SPREAD 2 *Simple and effective*	YES	8192-256	£49.95	KUMA
K-SPREAD 3 *Very powerful*	YES	8192-256	£89.95	KUMA
LOGISTIX *Combined spreadsheet/database*	YES	2048-1024	£79.95	GRAFOX
MAXIPLAN *Now bundled with critics choice*	YES	32760-512	£99.95	OXXI
MAXIPLAN PLUS *Better version of Maxiplan*	YES	CWM	£149.95	OXXI
PLAN/IT2.0 *Powerful Amiga Spreadsheet*	YES	32760-512	£89.95	BEST UK
PLAN/IT3.0 *Over 100 different chart styles*	YES	32760-512	£139.95	BEST UK
SUPER PLAN *Improved version of Logistix*	YES	CWM	£114.95	GRAFOX
SUPERPLAN *100 different graphic styles*	YES	CWM	£99.95	GRAFOX

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DATA BASES

PRODUCT	PROGRAMMABLE	INTEGRATED	RELATIONAL	PRICE	SOURCE
ACQUISITION *Expensive, but very professional*	CWM	CWM	YES	£249.00	TAURUS IMPEX
DATA RETRIEVE *Reads IFF files, unlimited number of fields, data import/export*	NO	NO	NO	£49.95/39.95	ABACUS
DBMAN *90% dBaseIII compatibility. Intended for programmers*	YES	NO	YES	£149.95	VERASOFT
K-DATA *Versatile system integrates with most Kuma software*	NO	YES	NO	£49.95	KUMA
MI-AMIGA FILE *User friendly flat card system, Intuition based*	NO	NO	NO	£49.95	SOFTWOOD
MICROBASE *A real budget system. Integrates Microtext*	NO	YES	NO	£19.95	ANCO
MICROFICHE FILER	NO	NO	NO	£69.95	SOFTWARE VISIONS
MICROFICHE FILER + *Both systems work very well and incorporate graphics*	YES	YES	YES	£99.95	SOFTWARE VISIONS
SUPERBASE PERSONAL *Imports graphics. Unique VCR-like control panel*	NO	NO	YES	£59.95/99.95	PRECISION SOFTWARE
SUPERBASE PERSONAL II *Includes a text editor and additional features*	NO	NO	YES	£99.95	PRECISION SOFTWARE
SUPERBASE PROFESSIONAL *A totally complete, professional data-base system*	YES	YES	YES	£249.95	PRECISION SOFTWARE

'Amiga Rom Kernel Reference Manual — Includes & Autodocs' (Addison Wesley £28.95)

Over the next couple of months Addison Wesley are releasing revised editions of the Amiga Rom Kernel Manuals (RKM's). The books, which constitute the official guide to programming the Amiga, have been up-dated and reorganized and now cover the latest release (i.e. version 1.3) of the Amiga operating system.

Ever since the release of the Amiga's version 1.2 operating system there has been a need for these manual revisions. The 1.2 'Enhancer' software notes detailed the major changes from version 1.1 and mentioned the existence of new routines such as OrRegionRegion(), XORegionRegion(), RefreshGList() etc., but referred you to the autodocs for detailed information. 'Autodocs', which are operating system up-dates provided primarily for developers of Amiga software, have never been particularly easy for the average Amiga user to get hold of and access to this type of material is going to be very welcome news indeed for all serious Amiga programmers.

'Includes & Autodocs' is the first of the new volumes to appear and it presents up-to-date include file listings together with a substantial amount of new programming information. Complete library and device summaries are provided and there is a section on system resource routines which gives details of control facilities and interrupt handling at almost the hardware level. Documented C and assembly language include files form a major part of the book and there is new material on the amiga.lib and debug.lib linker libraries (shared run-time libraries which are linked with your code as library files). A host of reference charts are provided giving function offsets, assembly prefix references, structure off-sets, hardware register maps and there's a C language cross reference listing showing where particular items are defined and where they are used within the include files.

Last of all comes a section on IFF files. This is a big improvement of the material given in the earlier 'Exec' manual - there is much more detailed information and a lot of it is presented in an easily read 'tutorial' style with some goodies by Jim Morrison of Electronic Arts being thrown in (including a discussion of the CallBack technique and its advantages).

The original RKM's came as a bit of a shock the first time around. Nowadays they are less intimidating and the new manuals have obviously benefited from comments and feedback over the last few years. A lot of work has gone into the preparation of these books and, as with all technical works, this is reflected in the price. Nevertheless this sort of information is priceless, and as with the earlier manuals, this latest release is going to be essential reading for the serious Amiga programmer. ***P.A.O***



I'm primed for action as my F-16 leaves the runway. This time my mission is to destroy a battalion of tanks. Suddenly, threat warning – interceptors closing fast! I quickly select dogfight mode and arm a Sidewinder. We both fire at the same time – chaff and a high-g turn out manoeuvres his missile. A loud explosion tells me he's not so lucky.

F-16 COMBAT PILOT



Flying fast and low, I turn my F-16 towards my target. Time to switch on the ground radar and arm the laser-guided Mavericks. I fire six missiles in quick succession, Lantirn automatically locking on to each tank. With flak bursting around me I dive for cover and head for home. Approaching base, I contact the tower and request a talkdown for my night landing.

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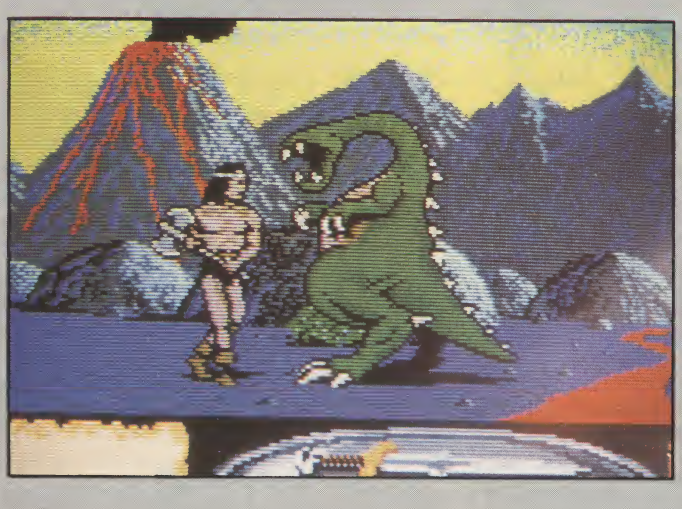
You may remember the scenario from Barbarian. You were the mysterious warrior hailing from the frozen wastelands of the North. Taking up the challenge of the scorcerer Drax, you defeated his best swordsmen in order to free the imprisoned Princess Mariana. Drax's spell was broken, and being the coward he is, he fled to his inner sanctum beneath his castle. As he went, you heard mutterings of a spell of eternal doom that Drax intended casting over the land. He had to be stopped, and of course you elected yourself for the job. As it happened, Princess Mariana fancied a crack at the old man herself, so the game gives you the choice of controlling either the hero or the heroine.

Before you reach Drax's lair, there are three levels to be negotiated. You start out in the windswept wastelands, where a gang of savage beasts await you. The first is a stumpy kind of ape, who expresses his dislike for you by kicking you into the corner of the screen. Timing is all in this game, and the little ape serves as a practise target for begginers. A few hacks from your weapon will reduce him to a cloud of smoke, giving you just a few seconds to leave the location before he is re-incarnated. There are usually two or three exits from each "room": one at either side and an occasional cave entrance. These rooms make up a maze, made more confusing by the fact that, for example, you can leave a location from the right, and find yourself entering the next on the same side of the screen. A compass in the form of a sword can be found in the status panel below, but is not much help unless you map out the level on paper.



"The slaughter continues in the next level: the caverns."

There are six different monsterous mutations to be found in each level. Stars of level one are the Neanderthal Man and the Saurian Beast. When that caveman corners you with his club, you can kiss goodbye to another of your lives, but get some distance between the two of you, and you can make an attempt at the infamous flying neck chop. Time it right and off comes his thick head. The blind Saurian Beast has his own decapitation method: he simply





rian II

bites off your loaf and swallows it whole!

The slaughter continues in the next level: the caverns. A disgusting cross between a man and a caterpillar, looking like something from a Victorian freak show, is one of the more harmless enemies. Most feared is the sub-terrainian lion, who savagely mauls any challengers, leaving them in a mutilated heap on the floor. Into the dungeons of the third level, and you get the once-in-a-lifetime opportunity of hacking the heart from the chest of an obese jailer!

"For the thinking man's beat 'em up, check it out (but stock up on the sick bags).

Drax's pride and joy, his Living Idol and the Great Demon are found in his inner sanctum, before you do battle with the man (or mouse?) himself.

With Barbarian, anyone, novice or master, could pick up the game, wiggle the joystick around and have a great time without a second's practice. Barbarian II has sadly lost that element. Give it to a mate who dabbles occasionally in computer games, and the chances are that they will find themselves hopelessly chopping away at thin air, whilst a caveman clubs their head to a mushy pulp. Practise it, learn how to deal with the enemies, and it all becomes a lot more fun. It's just a shame it doesn't have that universal instant appeal of its predecessor. If you like your gore by the bucketful, you will not be disappointed. Heads roll, blood spurts and jaws chomp, all with stomach-churning graphic and sound effects.

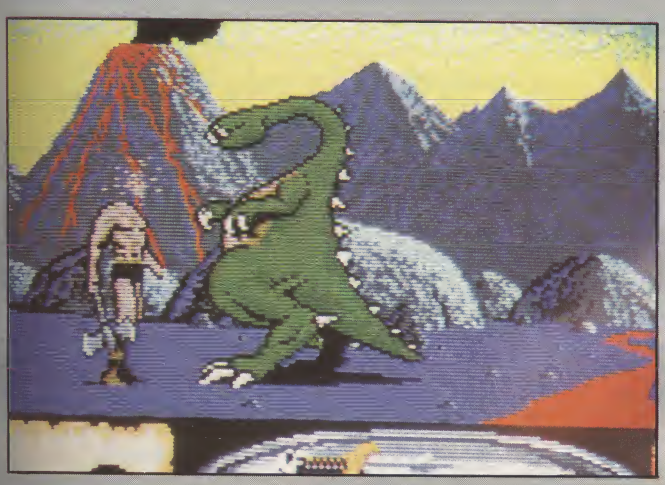
Barbarian I

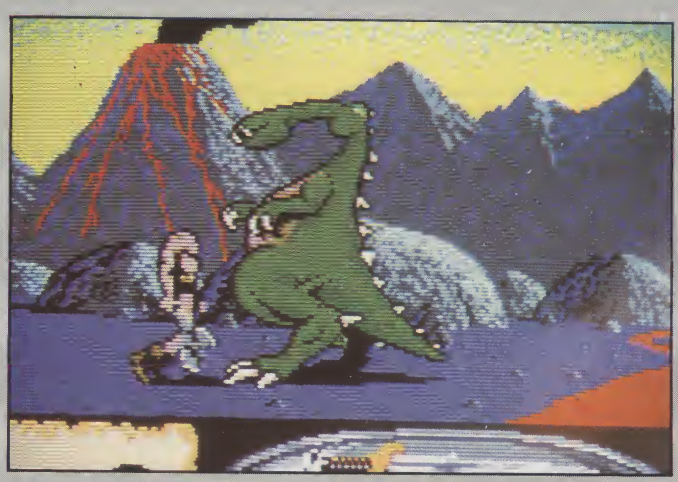
A bloody decapitation sequence and a buxom page 3 dolly advertising the game, turned out to be a winning combination for the original Barbarian. For everyone it offended, there were a hundred others who bought it for exactly the same reasons. The game should not have needed the gimmick of Maria Whittaker to lure the "mass of sexually frustrated teenagers" as someone put it, but the market being what it is, it did the trick. Although the situation seems to be changing, original games do not have a reputation of selling in accordance to their quality. From the marketing point of view, with Barbarian II, the obvious idea was to do it all over again. Fair enough, but fortunately, the game's designers have had the sense to come up with something new, whilst keeping the theme of the original.

Be prepared for a more adventure-orientated game than the first, and Barbarian II should go down a treat. Graphics and sound are both well up to scratch, and there is one of the best intros I've ever seen fronting the game itself. For the thinking man's beat 'em up, check it out (but stock up on the sick bags).

T.H.

Graphics: 8 Sound: 8 Playability: 7
ABSOLUTE VALUE: 7 Price: £24.95





FALCON: MISSION DISK 1

Mirrorsoft

Since I reviewed Mirrorsoft's 'Falcon' earlier this year, I haven't had too much time to sit in the cockpit of my favourite flight simulator (pressures of work and all that!!). You can imagine how pleased I was then, to be asked to take a look at the next stage in the development of the program, 'Mission Disk Vol. 1'. The mission disk is used in place of the original Disk 1 and offers a further twelve missions over a new battleground, which includes rivers, roads, railways, a swamp and a lake, plus a host of new targets. These include an armoury, factory, power station and oil refinery, SAM sites, the enemy base and the aforementioned T80 tanks and landing craft.

The objective is total defeat of the enemy forces, by destroying ALL his industrial centres and ground 'assets', thus forcing him into peace negotiations with your country. In the original



Falcon, each mission could be undertaken as a seperate entity, with a defined start and finish point. Now, the completion of any particular mission doesn't necessarily mean the end of it. For example, one mission calls for you to destroy a truck convoy that is carrying supplies for the enemy's attacks on your airfield.

Even if you succeed in destroying the convoy, a new one will set out at the start of the next mission, so you have to constantly return to the road to destroy it! A quick check of the map will show you that the convoy has to cross a bridge over a river. Destroying the bridge will give you some respite from the convoys but even that will be repaired in time. In effect, this means that, although there are twelve new missions, they become one, long fight to complete. Should the enemy forces reach your home Base, you will be captured on your return, taken as a P.O.W. and possibly executed for your 'war crimes'.

In my opinion, this makes for a far more realistic simulation and is certainly more entertaining and exciting than the original. But the enhancements don't stop with just a new set of missions and improved graphics. One of the criticisms of the original was the ridiculous landing 'envelope', where one small deviation from the set pattern would result in the aircraft crashing. This has now been corrected and, although I still disagree with starting your final approach at 37,000 feet about ten miles out, you are now less likely to crash if you get it slightly wrong or are flying a damaged craft. Also, the TV camera fitted to Maverick missiles now gives a correct 'zoom' image and the flight controls have been fitted with an 'auto-leveling' feature which brings the craft back into straight and level flight after minor banking maneuvres.

This can be switched out if required. Two other new features that I found enhanced the game were that your home field now has an air defence 'umbrella', so Migs are unlikely to follow you all the way to your base and shoot at you as you try to land. The Migs themselves have been updated to the latest Mig-29A 'Fulcrum' fighters (the type seen recently at Farnboro' Airshow), and are quite a handful for even the most experienced Falcon pilot. Personally, I prefer the Mission Disk to the original Falcon missions, there seems to have been a great deal of thought and effort put into what was an already superb product, to make it even better in every department.

N.S.

Sim in Session ...

Here we go! Increase power .. ease back and .. lift off. Gear up and climb to 10,000 feet. Throttle back and turn on to 045 degrees. Select Maverick air-ground missile .. switch COMED to radar mode and start target sweep. There they are! Three T80s rolling away from their landing craft towards the airfield I've just come from, I must take them out before they reach it! Ease the nose down and line up on the first T80..lock on..wait..-wait..in range! Fire! Missile away! Pull up..-there's the next one..line up..lock on. Blast! Off target! Forget that one..clear pickle. Where's the third one gone? Message from Base 'Landing craft beaching!' That means more T80s if they reach the beach! Pull hard round out over the lake. Select 30mm Cannon. Line up on landing craft. Altitude 1,500 feet. Fire! OK that's him dealt with. Must get back to finish the T80s. What's that on the radar? Strewth! It's a Mig 29 and he's got a lock on me! Missile launced! Time to get out of here!!
And that was just the first five minutes!

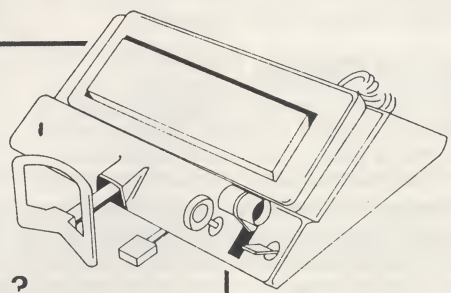
Graphics: 9 Sound: 7 Playability: 9
ABSOLUTE VALUE: 9 Price: £19.99

COMPETITION

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At this point you probably start wondering why you haven't already purchased this new product.....but before you run to your local dealer and get your order in, let us give you some good news. ***AUI*** once again has the exclusive! We are giving to some lucky reader who can answer the following questions, the Flight Control 1 control board, along with some SubLOGIC SUPER SIMULATION SOFTWARE !!! Some answers are in this issue, and some you will have to ask your favourite pilot about.



QUESTIONS.

1: Where on an aircraft are the AILERONS ?

2: Name any three aerobatic aeroplane manouvres.

3: What does V.O.R. stand for ?

4: What name was given to CBM's own WP program ?

5: What does the abbreviation ILBM stand for ?

6: Which American company build the F–16 fighter plane ?

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An ***AUI*** staffer has hands on experience flying FC1, and was incredibly impressed. "It's like flying the real thing," he said, having been given lessons by Stu Moment, SubLOGIC'S flying instructor boss. "I have seen the future," our wide-eyed staffer reported, "and it flies!"

Send your answers to us by 15th December on a postcard to:

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PD SOFTWARE — Free, Gratis, and Practically For Nothing

Are you the strategy-type war gamer? Then set your sights on Mega Games, says Stuart Williams

This month, we have a little something for fans of strategy and war games as I examine two PD and Shareware entertainment programs from the George Thompson Services Mega Games Pack Volume 1.

BATTLEMECH

BattleMech is an interesting game that simulates combat between two or more giant, robot-like machines.

You are the elite of the elite, a Droid Warrior. Your Battle Droid thunders under you as you pace across the land, searching for a reported enemy droid. You view the land around you, searching for the enemy. To your left the plain climbs gradually from low hills up to high mountains. To your right is a lake, with patches of treacherous swamp at the edges. Ahead of you the hills meet a mixture of light and heavy woods. You are debating whether to climb the hills or fight your way through the trees when the enemy droid steps over the crest of the hill.

What to do? Run? Fight? Let BattleMech give you the feel of piloting a 30 - 40 foot tall, fire breathing, earth shaking colossus that obeys your every whim. To enjoy the game you must put yourself in the cockpit of a Battle Droid.

BattleMech can be played with up to eight players. Input is through the keyboard, joystick or mouse. Each player chooses his input device by using it to roll for initiative at the beginning of the game. Only that device will be accepted for that player for the rest of the game. Selection is via a series of menus at the bottom of the screen. The menus are largely self explanatory; there are two main menus associated with two timers; Movement and Weapons. Everything is based on time.

Terrain is symbolised by a game board consisting of hexagonal units, representing different types of terrain as follows: plain, light forest, heavy forest, swamp, shallow water, medium water, deep water, low hills, medium hills, fire, and cleared. Terrain plays an important part in combat strategy. A good position can mean the difference between winning and losing.

Almost everything you do in a Battle Droid creates heat. It is your worst enemy. Heat can slow down your droid, throw off your targeting computers, cause your droid to shutdown unexpectedly, and even cause ammo to explode. The only thing that protects a pilot from the heat is the life support system. If that is destroyed you are in big trouble!

The main objective of combat is to eliminate the opponent's armour so that your weapons can damage delicate internal components, like the pilot. Once the armor in a particular location is destroyed any further hits in that area have a chance of hitting internal components, such as weapons, ammo, engines, gyros, etc. One or more hits will destroy the item. All weapons are destroyed with one hit. Ammo explodes if hit, doing additional damage.

There are two forms of combat, weapons combat and melee combat. Melee combat is hand to hand, punching, kicking and charging. Damage is based on the weight of the attacking droid. To punch or kick simply select the arm or leg you want from the weapons selection window. Weapon combat is equally simple. Pick the weapon you want from the weapons selection window. That arms the weapon.

BattleMech is a fascinating and well-implemented mixture of board-game strategy and role-playing atmosphere. The board is colourfully displayed in hi-res interlace mode (though the dreaded flicker is not a problem!) It is not one for the arcade crowd, perhaps, and it would have been nice to have a few animated action sequences, but highly recommended for those who like to think before utterly destroying their opponents!

BattleMech is Shareware, with a suggested donation of $20, by Ralph Reed of Florida, USA.

BULLRUN

Bullrun is a simple wargame that recreates the battle of First Bull Run, the first major battle of the American Civil War. You can take the side of either the Confederacy or the Union, and the computer will direct the opposing forces.

First, you must decide which side you want to play, and then click on the appropriately-labeled flag. The screen shows a map of the battlefield divided into squares. The green patches represent woods, blue lines are rivers, and black dots are towns. Bull Run is the large river that divides the map in half. It is only crossable at fords, denoted by black lines crossing the river. Your playing pieces are the red (Confederate) or blue (Union) squares, each marked with a two-letter identity code. Enemy units are the unmarked flags. The current game time is displayed at the top of the screen. Each turn represents half an hour of real time.

The object of the game is to capture an enemy town. The town must be occupied throughout a turn to win. The Union player has only one

town to defend — Centreville, in the northeast corner of the map. The Confederates have two towns — Manassas to the south and New Market to the west. If neither player wins by the 7:00 pm turn, the game ends and the computer decides who wins, based on relative casualties and how close each side came to their objective.

To get more information on your units, move the pointer over a unit and click the left mouse button. The title bar will show the full name of the unit's commander, the unit's 'mode' and the current/original number of men in the unit. You can give movement orders to each of your units every turn. Orders stay in effect until the unit reaches its destination or it is given other orders. In addition to movement orders, you can also set the 'mode' of the unit by clicking on the unit and then using the MODES menu. There are five different modes: Charge, Attack, Skirmish, Defend, and Withdraw. The mode of a unit affects how it will perform in combat: units with more aggressive modes will have a better chance of forcing the enemy to retreat, but will take more casualties than units with less aggressive modes. When you are finished giving orders to your units, you choose Execute Turn from the ORDERS menu. The computer will then begin moving the armies based on your orders. Notice that enemy units may move also; the computer is directing the enemy forces and is giving orders to the enemy at the same time as you.

No unit may move from one square adjacent to an enemy unit directly to another square adjacent to the SAME enemy unit. Combat is caused by a unit trying to move into an enemy-

"The size of the arrow shows the aggressiveness of the attack."

occupied square. A window will appear, telling you which units are involved and what casualties are sustained. A blinking arrow on the map will appear, showing exactly which unit is attacking and the direction of the attack. The size of the arrow shows the aggressiveness of the attack. When you are done seeing the combat results, you can hit any key or click the left mouse button to continue.

Units which take too many casualties can become 'shattered.' A shattered unit is marked with an asterisk in the title bar when you click on it. Shattered units cannot be in any mode other than Defend or Withdraw. If a unit takes excessive casualties, it may be 'routed.' Routed units are removed from the map and take no further part in the game.

At the beginning of the 11:00 AM turn, the Confederate player receives reinforcements from the 'Smith' unit at the town of Manassas, unless the town is enemy occupied. Once the Smith unit appears on the map, it is treated as any other unit and may immediately be put to use by the Confederate player.

BULL RUN is an interesting example of a small-scale wargame, and might be supplemented with some of the table-top scenery and playing pieces so beloved of wargamers, using the computer as your opponent and moderator. Just the thing for the beginner to wargames! Bullrun is Shareware, by David Townsend of Rockville, Maryland, USA, who suggests a contribution of $20, for which you will receive a complete User's Manual, a function key template and a disk containing the source code for the program, which strikes me as a bargain.

S.W.

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Jack Nicklaus'

Greatest 18 Holes of Major Championship Golf

Accolade

Over the past 20 to 30 years, one man has dominated the golfing world, so much so that he can be recognised by just his nickname, 'The Golden Bear'.

The game is based on the other popular Accolade golf simulation, Mean 18 and the playing style is much the same. The view of each shot is the same from behind the golfer, facing towards the green. At the bottom of the screen is the scoring area and to the left the shot strength meter.

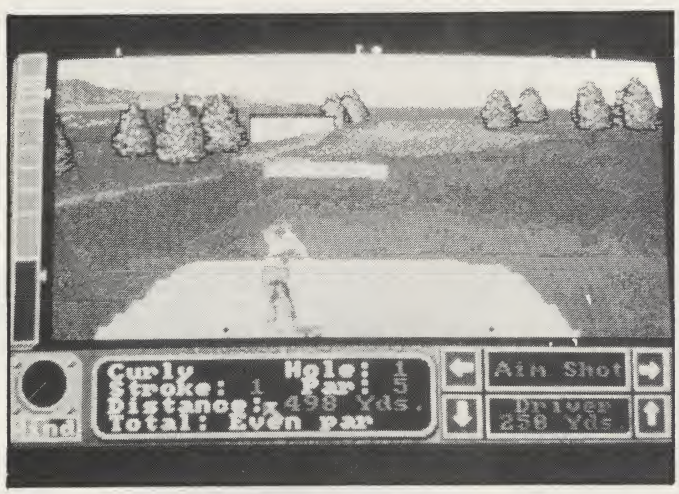
You may select one of three courses: Castle Pines, Colorado; Desert Mountain (also known as Cochise), Arizona; and Jack's Greatest 18. The first two courses are replicas of actual courses designed and built by Jack Nicklaus and the last is made up of the holes he has selected because they are the championship makers, the holes that must be overcome to win a major championship on that particular course. They are selected from such famous courses as Pebble Beach, St. Andrews, Royal Lytham, Muirfield and Augusta National.

Between one and four players are allowed and any number can be computer players. When computer players are involved the individual must be selected from the group of people available. These range from the great man himself to beginners of either sex. Three Tee positions are available depending on your sex and ability, these are Ladies, Mens and Pro.

As well as the driving range and the practising of various holes, there are two types of match available, Stroke play, where the opponent is the course, and Skins, where the opponents are your playing companions. The Skins game involves the agreeing of set prize money for each hole on the course. The winner of the hole takes the prize money, if the hole is shared then the prize money is held over to the next hole and so on. The only thing now left to do is select which level you wish to play. The two available are Beginner and Expert, the difference being that the former provide a hint as to which club should be used and what distance can be expected if played correctly.

Having made all these selections you now move on to the course with an overhead view of the hole you are about to play. This is an important part as it is from this picture that you can decide which direction you should play the shot. When on the Tee the line of the shot is automatically set in the direction of the Pin, this however, is not always the best shot to play as the hole may have a bend, or dog leg in it. The position of Bunkers and water hazards can also be seen on the overhead that are not viewable from the tee.

All play is by way of the mouse and shots take three clicks to perform. The first initiates a bar to rise on the shot meter. This is for the strength of the shot and the meter is graduated in tenths to make it easier. The second click halts the rise and starts the bar going down, this must be halted with a third click, as close to the zero point on the bar as possible. Under or over this point will result in a



hook or a slice. The more expert players can of course use this as a feature to swing the ball around an obstacle, such as a tree. A complicating factor is the strength of the wind and when present this must be allowed for. Putting uses the same mechanism with the added complexity of the slope of the green, which must also be allowed for in your put.

The game plays very much like Accolade's Mean 18 with the addition of some digitised pictures of Jack Nicklaus and comments from him on the holes. Good use has been made of the Amiga's graphic capabilities and this makes the game very interesting to play. Whether or not you wish to buy a similar version of a game you already have, is up to you, but if you do not have Mean 18 I would highly recommend this version.

L.K.

Graphics: 8 Sound: N/A Playability: 9
ABSOLUTE VALUE: 8 Price: £24.95

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RVF Ho

Micro Style

Your sights are set: Formula One World Champion. That day seems a lifetime away for a young rider starting out in the Clubman championship. Nevertheless, the thrill of your first season, racing on tracks with such quaintly British names as Ladbroke Hall and Nutford Place, is enough to have you twitching your throttle-wrist in anticipation.

"First stop on the road to glory is Tetbury."

First stop on the road to glory is Tetbury. With your name logged onto the list of competitors, you are free to get to know the curcuit in a practice session. As well as learning the ins and outs of the track, you can also earn yourself an advantageous grid position, by beating or coming close to the lap record. With practice over, you will find yourself on the grid among a tight cluster of similarly abmitious riders. As you wait for the green light, be careful not to over-rev the bike, as an over-enthusiastic wheelie can knock you down the field before you make it off the grid. The green light, and before you know it, you've hit the top of first and are flicking your way up through the gearbox.

A generous left-hander allows you to keep the power on through to the second straight. A challenge from behind momentarily steals your attention from the rapidly approaching hairpin. As he drops back you breath a mental sigh of relief, before tackling the bend ahead. Perhaps it was something to do with the 180 MPH approach, but you have no time to ponder the reason why as you find yourself and your bike wrapped around a trackside conifer.

Realising that this is just a computer game, you miraculously heal your shattered ribs, do your best at rebuilding the bike, and get back on the track and into the race. A hearty push from yourself gets the bike ticking over once again, and it's off to catch the escaping pack.

If you are unlucky, that fall may have taken out your speedo, or worse still, your rev-counter. If that is the case, the bike's sampled engine sounds take the place of the dials. You might also find one of your six gears has upped and left. Fortunately, none of

What 'makes' a hi-tech sports sim...
There seems to be a belief among game designers, that when a technically complex sport is the subject of a computer game, there are two courses of action: either only the most thrilling aspects are included, leading to an "arcade" game, or a more serious approach is taken in programming a "realistic" simulation. The trouble with the simulation, is that in all the efforts to recreate every last knob and dial, the exhileration of the dogfight, grand prix or whatever, is lost through slow moving graphics. Then again, to an F-14 pilot, Afterburner would seem as far removed from the real thing as Pac Man. With RVF Honda, Microprose have made an attempt at appealing to both camps, and surprisingly, look as they might just have pulled it off.





nda





these failures is crippling, and it is quite possible to rejoin the leaders and regain a decent position. If, on the other hand, you are competing in a race with more than the default five laps, it could be worth stopping off at the pits for an instant tune-up.

"Your main concern is staying on the track."

Collisions with opposing riders are not too much to worry about. Your main concern is staying on the track. Although the spectacular crash sequence that follows as you plough into a tree, has far less serious consequences than the real world's equivalent, it is harsh enough to recreate that thin line between success and failure. Race too cautiously, and you'll be left straggling at the back of the field. To win, you need to know when to cane it, when to lay off, and how much to lay off. That is one of RVF's more realistic aspects, which can seem a little severe to some, but it does force faultless racing from the dedicated.

RVF's only competition is Electric Dreams' superb Super Hang On. Graphically, Super Hang On is far more extravagant, but what RVF loses in artistic flair, it makes up in other areas. The sensation of speed is excellent, due to the combination of fast moving graphics and ripper sounds. Graduated sunset skies, hills, plenty of trackside scenery and true perspective for every bike, hoists it way above the standard of previous simulations' visuals. The on-going championship together with the automatic game-save feature goes further to prolonging its appeal. A brilliant game, and easily the best to appear over the last few months.

T.H.

Graphics: 8 Sound: 8 Playability: 9
ABSOLUTE VALUE: 8 *Price: £24.95*

STRIDER

CAPCOM

Of all the Capcom coin-ops Strider has to be among the trickiest candidates for conversion. The arcade machine comes complete with an immensely flexible main sprite and totally smooth multi-directional scrolling that has to be among the most impressive pieces of hardware to have made an appearance in the arcades. Luckily, Tiertex have coped admirably with what was always going to be a very difficult tie-in.

"The initial Russian city is followed by an icy, tiger-infested Siberian plain"

As soon as you get to the title screen, it's already starting to look good. The year is 2048 and Strider, the acrobatic hero of the title, is airlifted onto the rooftops of a troubled Russian city. His mission is simple: defeat the wicked lord responsible for creating universal disorder, or die. The strange and dangerous world in which you've landed consists of five different levels. The initial Russian city is followed by an icy, tiger-infested Siberian plain, a prehistoric forest complete with dinosaurs, the flying Battleship Ballog and finally the hi-tech headquarters of the evil Lord's operations. Each is crammed with steep-sided roof-tops, deep canyons, tall buildings and precarious natural obstacles.

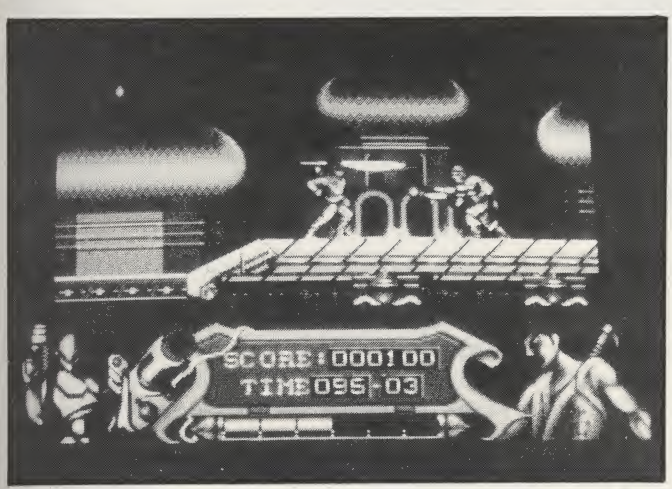
Luckily Strider is very athletically built and leaping from precarious ledge to ledge, climbing ice-covered walls at 90 degrees, and spinning expertly through the air to avoid an opponent's bullet mean nothing to him.It may take a while to get used to all the different available moves but once you've discovered them all, you should be able to swing, duck, slither along the ground, cartwheel and jump from precipice to tower, from wall to narrow ledge, with little effort. The baron has plenty of supporters. They include armed warriors, robots, savage sabre-toothed tigers, flying fish and boomerang-firing Amazon women (that's mentioning just a few). Most fire bullets and



drain energy on contact. To make matters worse, gun emplacements, laser beams and mines are strategically positioned all over the place.

Initially, Strider has nothing more than a sickle-shaped laser gun to protect himself. As he progresses, however, pods containing extra weapon power, increased weapon range, energy or an outrider can be found lying around or are flown in by airborne enemies. Shoot them once and the bonus item appears. All bonuses only last for a limited period of time so its best to make fast use of them. All this ammunition comes in particularly useful when you're dealing with one of the end-of-stage toughies (that's four per level). They range from robot walkers and multiple laser guns to huge muscle-bound enemies and powerful dinosaurs.

The toughest monsters are reserved for the very end of the level - a huge segmented snake of Russian fighters attached to a huge slicing sickle-shaped head, and a gigantic bony dinosaur are just two of the bizarre creatures to be



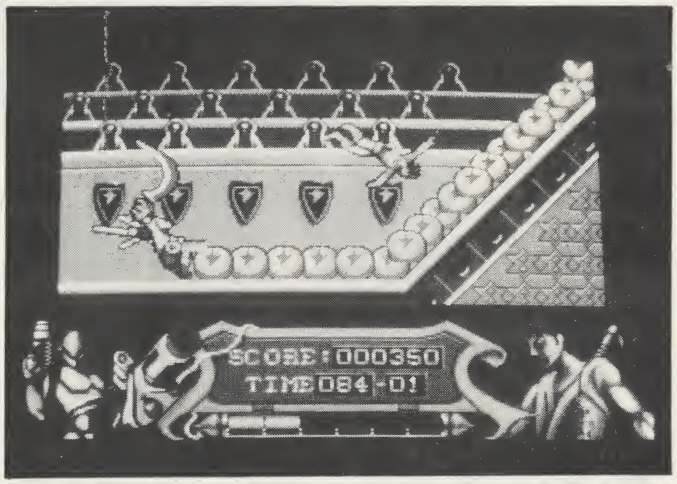
encountered. From the title screen onwards, there's no denying that Strider is a very slick and professional-looking product.

The background graphics are extremely detailed and colourful (though they do tend to slow down a little when too many sprites are crowded on to the screen) and manage to recreate the Eurasian look and feel of the coin-op very well. The different

"The game's most eye-catching feature is the animation of Strider himself."

levels, ranging from the dinosaur-inhabited forest to snow-covered roof-tops contrast effectively with one another. The game's most eye-catching feature is the animation of Strider himself. All his movements as he climbs, swings from platforms, leaps and jumps are shown in plenty of detail. It is just a pity that the scrolling of the backdrops can't match the smoothness of the main character: it's a bit too jerky for what you'd expect from an Amiga.

Sound-wise, there's really nothing to complain about. A war-like soundtrack runs through almost



all the levels and there are one or two impressive sampled effects, such as the Lord's victorious laughter when you die or the grinding sound your weapon makes.

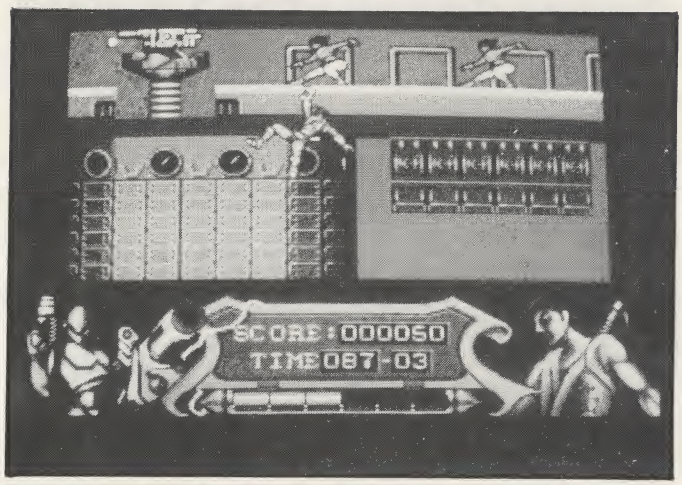
"The gameplay itself is practically faultless."

The gameplay itself is practically faultless. The controls are accessible, the action's easy to get into and there are plenty of obstacles, enemies and end-of-level meanies to deal with. One thing's for sure - you certainly won't get bored. Of course there are two ways of looking at a coin-op conversion; you can judge it purely on its own merit or on how well it has managed to translate the original arcade machine.

As a conversion, Strider isn't exceptionally accurate (it's only got five levels and the action doesn't cover the whole screen for example) but as a game in its own right it leaves very little to be desired. As long as you're not expecting arcade-perfect gameplay you definitely won't be disappointed. Strider is action-packed, entertaining and brilliantly put together.

K.H.

Graphics: 8 Sound: 7 Playability: 9
ABSOLUTE VALUE: 9 Price: £19.99



CASTLE WARRIOR

DELPHINE SOFTWARE

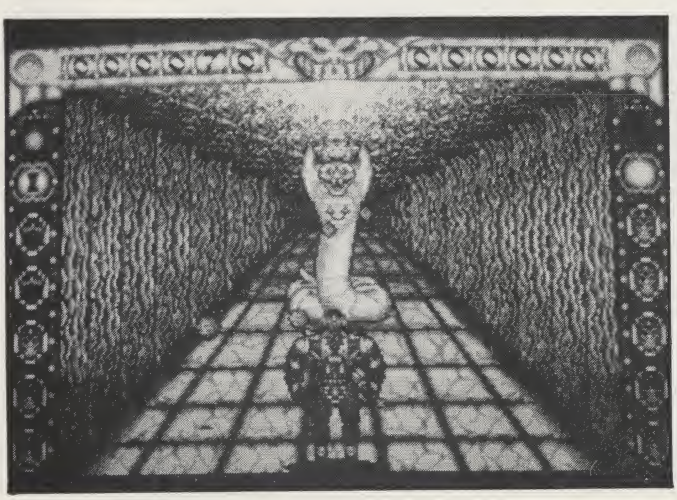
This is the latest release from Delphine Software, the French outfit with an ear for really great music. If nothing else, this game has some of the best music I have heard recently, that says a lot in these days as Amiga standards continue to rise.

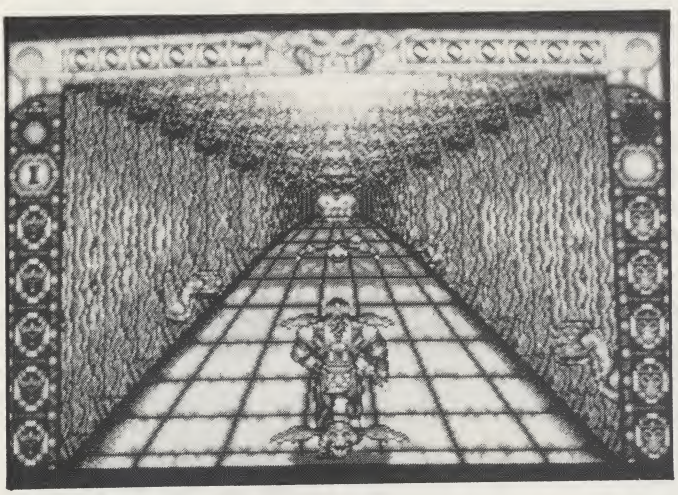
I am sorry to say that the music overshadows the game completely as the gameplay has nothing new to offer. Pretty good graphics help, but the idea of fighting your way down dark corridors thrusting your weapon into anything that moves until you reach the final screen is nothing new.

You play the part of Edelred the Brave, son of Edelred the Good, Ruler of Pacifia a peaceful little Kingdom where everyone lives in harmony and tranquility. Sounds to me as though they are all bombed out of their brains most of the time! Anyway, the evil wizard Zandor has schemed and plotted to kill the king. He has at last managed to poison his food. The King is near to death. You must, as heir to the throne, seek out Zandor, kill him and retrieve the antidote so that your father may live.

"Fireballs? They looked like Jaffa oranges to me!"

You start your quest, as all good men do, by stomping through a dark corridor, weilding your sword you try to avoid or kill the nasty little creatures that protect Zandor. Eventually you come to the end of the corridor where you must pass two giant monsters. They get harder to beat, naturally, as you go on.





If you lose a life, however, you don't have to start all over again, as you continue where you left off. These monsters spit fireballs at you which you must try to hit back into the monsters face. Fireballs? They looked like Jaffa oranges to me!

The third level has you paddling down the river in a canoe fending off evil beasties. The next level is tougher fighting another monster Jibba, harder and more frustrating than before. The good thing is that after him you get to meet the horrible wizard Zandor, sitting there on his throne holding the magic antidote. All you've to do is thrust your rather large sword up the nose of the wizard and the potion's yours. Et Voila!, as they say in France. You get to return home in triumph, to give your father the magic antidote so that the whole kingdom can get back to being smashed out of their brains again!

You don't need much of a brain yourself to play this game, but you do need fast reflexes to get to the final screen. Its a bit of a challenge as the 3D effects of sprites moving towards you are difficult to judge. Like everything though, practice makes perfect and this game will take that, lots of practice.

Although I was not entirely hooked on the gameplay I just loved the music. Enough to keep coming back again and again.

B.C.

Graphics: 6 Sound: 9 Playability: 5
ABSOLUTE VALUE: 6 Price: £24.99

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Go Faster, Stripes!

Mark Smiddy checks out an accelerator board based around an ultra-fast 16Mhz, 68000

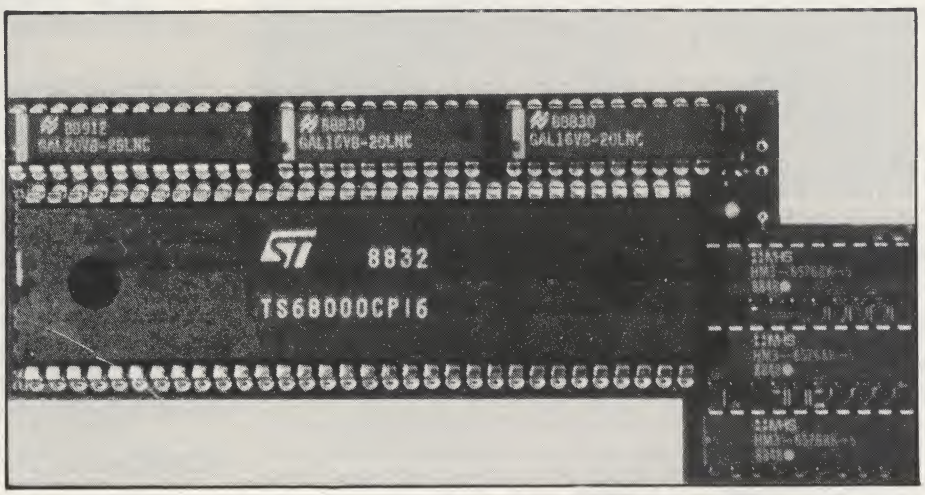
When the Amiga was designed, 68000's capable of running at 16Mhz were rare and expensive beasts. In these days of high technology, the price of such components has dropped dramatically. This leaves the way clear to introduce boards capable of running the Amiga at vastly increased speeds, - and, therefore, make the machine even more powerful than it already is.

Creative Microsystems' aptly named, Processor Accelerator or PA is just such a board; it can actually double the Amiga's clock speed from 7.16MHz to a staggering 14.32Mhz. The question is though, just how much does this affect the Amiga in real terms. There is only one way to find out - fit it and see.

The Processor Accelerator can be supplied in one of three distinct versions for the three variants of Amiga currently in use; the A500, A1000 and A/B2000. Since these are essentially all the same, we chose to test the board for the A500. This being the one most of you are likely to require.

Assuming everything has gone according to plan, the Amiga will boot up as normal - going through the agonising self-test where the power light does not come on for several seconds. Insert a Workbench disk, however, and the machine acts as if nothing has changed - even if the board is fixed at 14MHz.

This is the real root of the problem with the PA board - the machine just does not seem much faster. According to the software supplied with the board, our A500 was running at around 117% of its normal speed (or about one fifth as fast again). After extended use, the machine does *feel* faster and some graphic operations, smoother. Maths intensive programs however, were not affected appreciably.



For a real increase in speed (and somewhere this board may score over its rivals) is the provision for an MC68881 hardware floating point unit or **FPU**. If software supports an external FPU, little will at the moment sadly, it can provide a tenfold or greater increase in speed! In other words, Sculpt 4D could draw a picture in one-tenth of the time.

Creative Microsystems' PA is a very well engineered device but the lack of apparent speed will prevent it from becoming a standard add-on. Where it will win friends though, is in the world of ray-traced graphics but only if the software supports the FPU. The 68881 incidentally, is treated as an external device by the 68000 and 68010 which exacerbates the programming problem.

Price: £149.99 (+VAT). Contact: Third Coast Technologies Ltd. Unit 8, Bradley Hall Trading Estate, Standish, Wigan WN6 0XQ. Tel: (0257) 426464

Fitting The Board

Fitting the Processor Accelerator is a job you can do yourself and should take around 30 minutes - provided you have some knowledge of Amiga internals, and read the manual. The problem with this of course is: in order to fit the board - which replaces the existing 68000 - it is first necessary to remove the casing, thus voiding any warranty you may have. In any instance, if you do have the board fitted professionally, its presence may still invalidate your warranty.

For those of you contemplating the operation, here is what you will have to do. First, remove the Amiga's top casing. Now, remove the keyboard and gently prise the keyboard plug away from the PWB. Place the keyboard assembly to one side and lift the small metal tags located around the shield.

Next, undo the screws holding the metal shielding in place. These screws have a 'Torx' head so I would recommend using the correct tool - a number 10 Torx screwdriver. This should be available from your local Motor Factors, since Torx screws

continued on page 102

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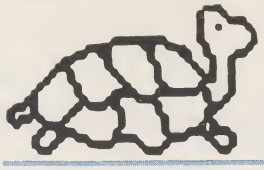
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Graphical Ca

As a follow up to AUI's August feature on high-performance video graphics, Mark Smiddy explains what ILBMs are and the role they play in Amiga graphics...

The Amiga has long been regarded as the graphics micro for the man in the street; since its introduction almost five years ago, it has brought about a revolution in home computer graphics. Today, few people are content with the rough, monochrome images many of the "older" computer generation - some now reaching their late 20's - were so fond of. These days, we expect a screen image to look like what it is meant to portray, a person, dog, tree, flying saucer - whatever. We are not expected to use our imagination.

All this has been brought about by the adoption of ILBM display structures into more advanced home computers. Early offerings, like the Acorn BBC machine made an attempt, but rarely managed to impress real hard-liners. It is interesting to note, some were more impressed with the slightly different approach taken by machines like Sinclair's Spectrum (and the failed MSX) which boasted up to 16 colours on a high-resolution screen in 9k! ILBM on the other hand is somewhat more greedy in memory terms - a typical 320x200 16 colour display takes up no fewer than 32k of precious RAM.

Bits-n-Bytes

To understand how these systems work, it is first necessary to understand the role of binary mathematics. It is vital to realise binary numbers are formed of 0s and 1s. Each zero or one represents one binary digit - commonly called a bit.

This simple system is ideal for computers because each bit can be represented by an electronic switch where: off = 0 and on = 1. Like the decimal (or denary) system of counting, in binary the highest values are on the left of a number and the lowest on the right. From right to left the numbers increase in a sequence of 2 raised to the power of the poition numbered from the right. For example, the number 1001 = (8*1) + (4*0) + (2*0) + (1*1) = 9. Figure I shows this effect more clearly.

By varying the number of bits it is possible to vary the size of the numbers which can be stored. Four bits hold any value from 0 - 15, eight bits 0 - 255 and so on... Enough about binary. However, if we receive enough requests we will do a feature on binary maths in the coming months.

Of the two systems I have mentioned, the easiest to understand is the one employed by the budget micros. At first glance ILBM seems rather a waste of memory for what amounts to the same thing - a high-resolution, multi-colour display. Of course, the Amiga's designers were well aware of the rival systems and considered the first to be a waste of time - even though it is cheaper and far simpler to implement electronically. Nevertheless, there are some similarities between the two systems.

Forgetting colour for a moment, any high resolution display is made up of thousands of tiny dots called pixels. The actual number determines the final resolution although this is largely unimportant. From a users angle any pixel on the screen can be addressed by a system of cartesian (X-Y) coordinates. By switching individual pixels on and off we can create an image.

To see how this works, pick up a daily newspaper and study any picture close up. If you can use a magnifying glass this will help. What you should be able to see is the picture is made up of thousands of tiny black dots (or pixels), in photography this is known as grain.

"As you can see from the diagram,the screen is organised as rows of bytes - the number of rows determines the Y resolution."

Returning to binary, consider Figure II. This is one way a screen display can be constructed - the technique is called memory mapping. As you can see from the diagram the screen is organised as rows of bytes - the number of rows determines the Y resolution. The status of each pixel is determined by the status of each bit in every byte. So in this way the X resolution is determined by the number of bytes per row multiplied by 8 (the number of bits in one byte).

From this it is easy to see a 320 x 200 pixel display takes up: (320/8) = 40 bytes horizontally by 200 bytes vertically; or 8000 bytes. This type of screen layout is called a bit-map or bit-mapped display and using this technique it is easy to generate a monochrome (two colour) screen - which is precisely what happens in the Amiga.

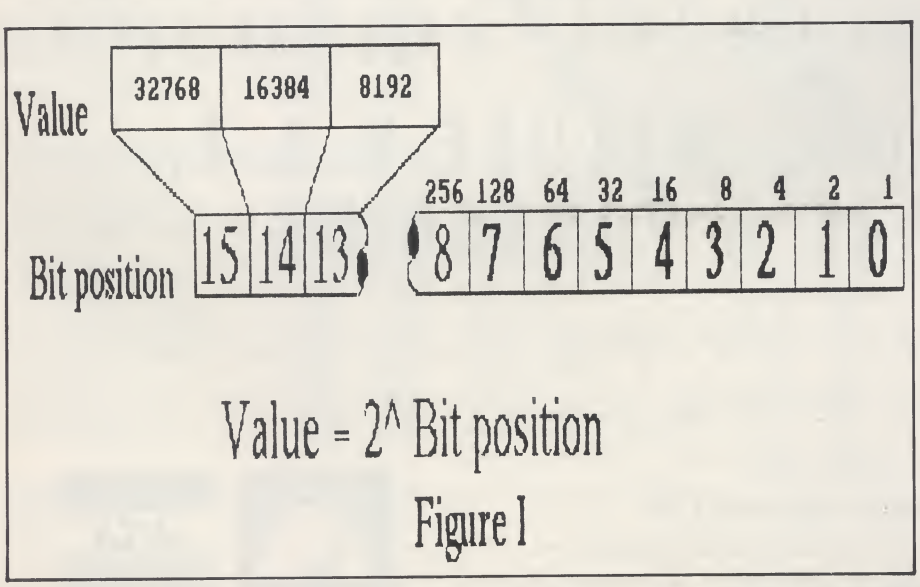


Figure I

artography...

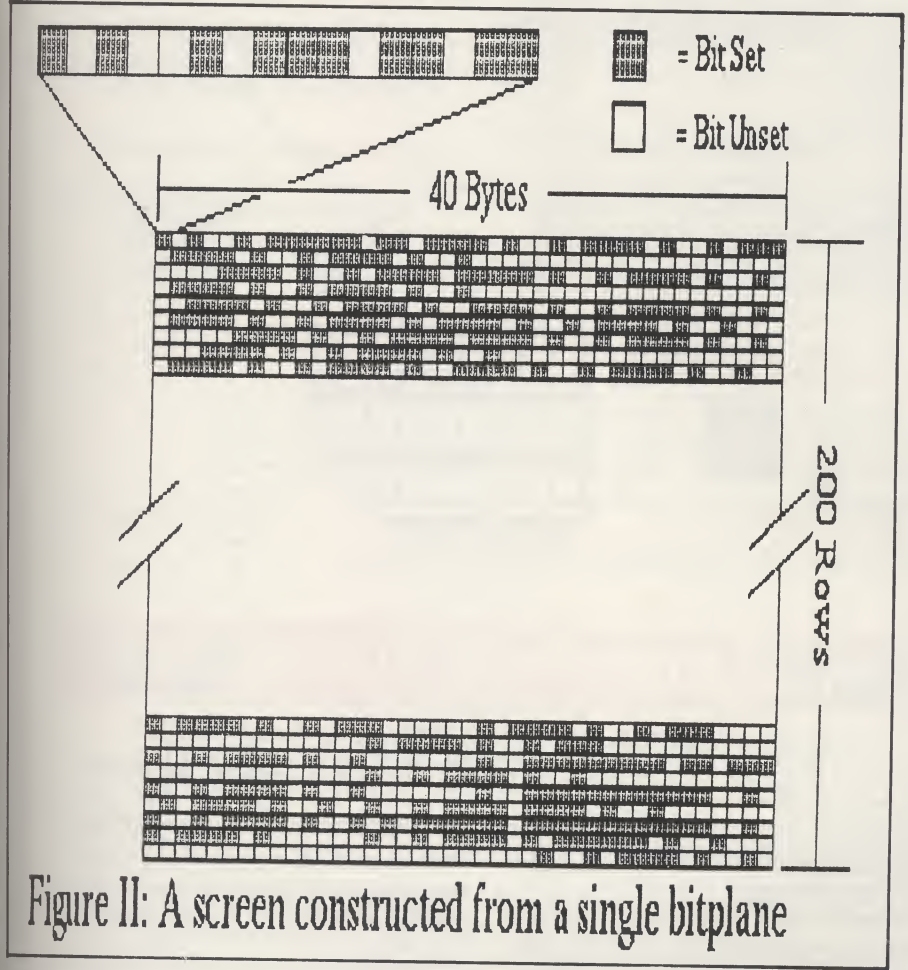


Figure II: A screen constructed from a single bitplane

Who's Kidding Who!

Adding colour though, adds to the complexity and this is where the budget micros cheat. When they boast 16 colour, high-resolution screens - what they really mean is 16 pseudo-coloured, monochrome screens.

This is how it works: in a theoretical case, to simplify the maths, the first 8000 bytes of screen memory are used to generate the monochrome screen in the way already described. Now imagine each display can show 40 columns x 25 rows of text. This gives a grid of 40x25 = 1000 character positions. Incidentally, from the same premise the pixel resolution can be calculated thus: 320x200 = 64000 pixels; also the matrix size of each character is 8x8 pixels.

The screen is now drawn in the usual way with each bit representing on pixel where 1 = ON which gives monochrome display. To add the colour: imagine the 40 x 25 grid of characters is a matrix of stained glass rectangles. Lay this glass sheet over the black and white display and you get colour where the white light filters through!

In practice, this is all done electronically and the colour is added to the pixels as the display is made up. However, the colour resolution is much coarser than the pixel resolution, so it is possible for adjoining colours to interfere with one another; for instance, this occurs where two diagonal lines of different colours cross. Manufacturers often refer to this effect as staining and with care it can be avoided; ultimately the situation is less than satisfactory.

To get a colour resolution the same as the pixel resolution a completely different technique must be used. Here each pixel must be represented by more than one bit. For example, if you want a 16 colour display you require four bits (the values 0-15) for each pixel. This tends to confuse matters somewhat, although the theory is really quite simple once you get to grips with it.

The most obvious way of performing this function would be to divide each byte into two halves of four bits each. The display electronics would simply read the memory and transform each four bit group into one pixel.

This works fine until you want to use an odd number of bits - say three bits for an eight colour display. Now you come across a problem because the display hardware has to read two groups of three bits for the first two pixels. Then it has to read the last two bits of the current byte and add in the first bit from the next. The situation is far to complex to be practicable. However, the Amiga can display eight colours, but how?

ILBM Explained

The solution is to use an InterLeaved BitMap or ILBM. Like many computing terms, interleaved bitmaps sound more elaborate than they are. By now you should have some understanding of what a bitmap is. The problem arises with the interleaving, a term which means "to alternately place items together in a structure."

By way of analogy, think of "One potato, two potato" we played as children: two or more got together and made a stack of fists, each in turn, around the group. The result was in effect, an interleaved fist-stack.

"In practice of course, there is a limit to the number of bitplanes the hardware can process."

To show how this applies to graphics, take a pack of normal playing cards and divide it into four stacks of 13. For the sake of example, think of each stack as being one bitplane and number each one from left to right - 8, 4, 2, 1 respectively. Now take one card from each in turn and make a pile. These four cards represent the four bits which will make up one pixel. The number of the stack represents its binary value.

The number of stacks used is not significant. As long as you know how many stacks there are - that is, the number of bitplanes - you can easily construct the display by taking one bit from each.

In practice of course, there is a limit to the number of bitplanes the hardware can process. Consider the example above of a 320x200 stained monochro-

continued on page 64

continued from page 63

Graphical Cartography...

me display. This used a single bitplane occupying 8000 bytes of memory, plus a colour plane. The colour plane is no longer important - but the size of the screen bitplane is. To get the 16 colours we require, we need four 8000 byte bitplanes - or approximately 32k. Add another bitplane to get another 16 colours and we need a further 8k.

It is possible to go on adding bitplanes virtually ad-infinitum, and indeed some modern systems do just that. Sculpt-Animate 4D can generate images with no fewer than 24 bitplanes offering a staggering $\hat{2}24 = 16,777,216$ colour values (shades) using no fewer than 192k of memory at 320x200 pixels. At the moment the Amiga cannot display this directly but peripheral hardware exists that can (see ***AUI*** August).

The limit of bitplanes in the Amiga is governed by the display hardware - and without launching into a discussion of how that works - let us leave it at six bitplanes per screen, offering 64 colour values.

Now you may be wondering, especially if you have DPaint III, why you have not got an option for 64 true colours. The reason for this is simple; internally the Amiga's palette only has 32 colour registers (twice as many as the Atari ST incidentally). Recognising this problem, the designers came up with a rather clever solution for Fat Agnes, which has become known as Extra Half-Brite or EHB.

In EHB the Amiga's display is constructed from a five plane ILBM, plus a sixth control plane. As the colours for each pixel are shifted into the colour table - to generate the display - the status of the control bit for each is noted. If this bit is set to one then the display control halves the output luminance - so giving 32 + 32 colours.

I expect by this point more astute mathematicians will be wondering how does the Amiga manage to display 4096 colours using an ILBM? Surely this must take up 12 bitplanes - $\hat{2}12 = 4096$ - and use 96k assuming low resolution NTSC! As we all know of course, it does not.

HAM for the egg-centrics...

Well, this is where the Amiga's designers used a little artistic license and borrowed an idea from the budget micros - which is why I covered the system they use in so much detail. Of course, being the Amiga, the system looks entirely different but the principle is similar.

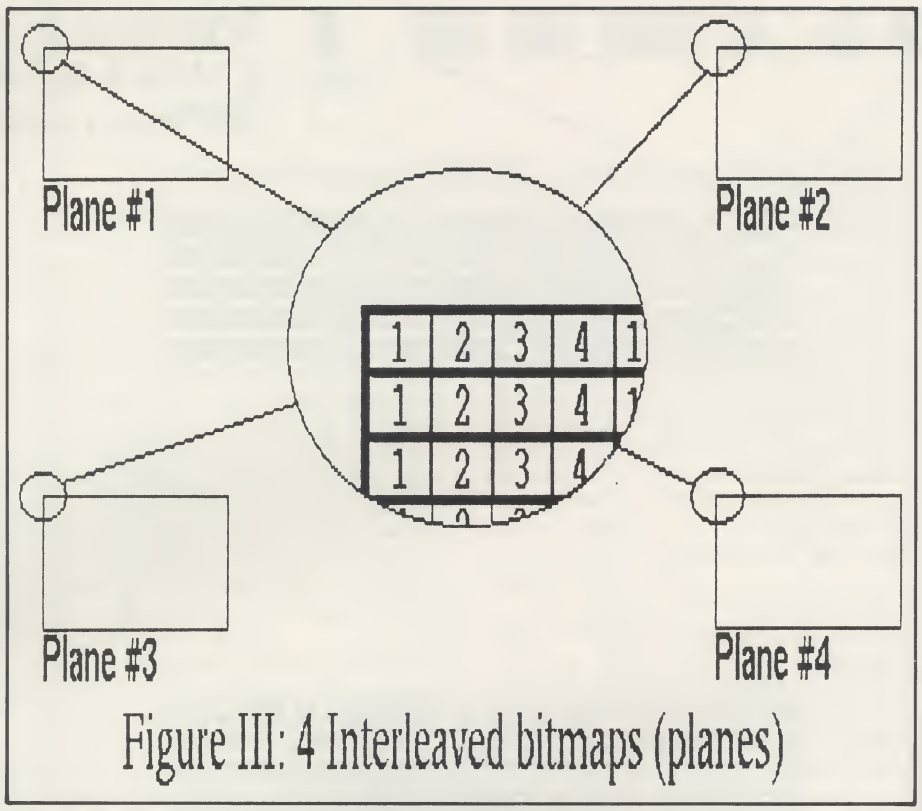


Figure III: 4 Interleaved bitmaps (planes)

It is called Hold And Modify or HAM, and this is how it works:

The display is constructed from six bitplanes organised as two separate ILBMs. The first, think of it as the display ILBM, consists of four bitplanes giving a choice of 16 colour values. The second, a control ILBM, consists of the remaining two - offering four possible options.

"HAM works well in many cases for the simple reason adjacent colours tend to change very gradually."

As the display is constructed, the value of the display ILBM is shifted into the colour register. Next, the value from the control ILBM is shifted into a two bit register; it is this value which determines what happens next.

- If the control ILBM contains zero: no action is taken. The pixel is displayed according to the value in the display ILBM.
- If the control ILBM contains one: then the RED and GREEN components from the pixel to the left of the current one are passed to the colour control. The BLUE value is taken from the value in the display ILBM.
- If the control ILBM contains two: BLUE and GREEN components from the previous pixel are passed to the colour control. The RED value is taken from the value in the display ILBM.
- If the control ILBM contains three: RED and BLUE components from the previous pixel are passed to the colour control. The GREEN value is taken from the value in the display ILBM.

As you can see from this table, this is where HAM mode gets its name from: the colour of the last pixel is held and modified slightly if necessary. HAM works well in many cases for the simple reason adjacent colours tend to change very gradually. It does fall over though in areas where there is a very rapid tonal change.

You should also be able to see because of the complexity of the HAM display, most programmers shy away from it. Until now, only one game - Pioneer Plague - has been brave enough to use it. Even Dan Silva's state-of-the-art Deluxe Paint III does not feature HAM, probably because many artists find it too complex to be worthwhile. However, HAM lends itself particularly well to the digitized pictures and ray-traced images for which the Amiga is now so famous for. Whilst it may not give a true 4096 coloured pixel resolution, it comes close enough to suit most purposes adequately; and, it is all due to ILBMs.

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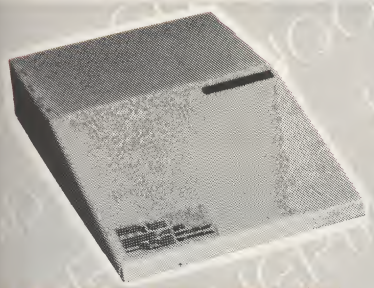
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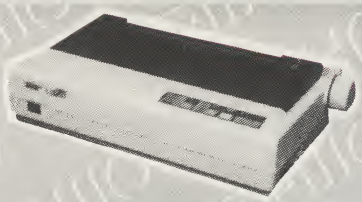
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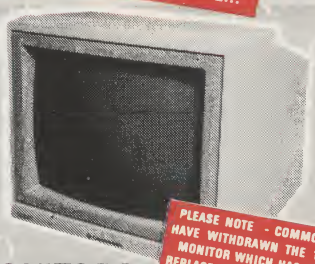
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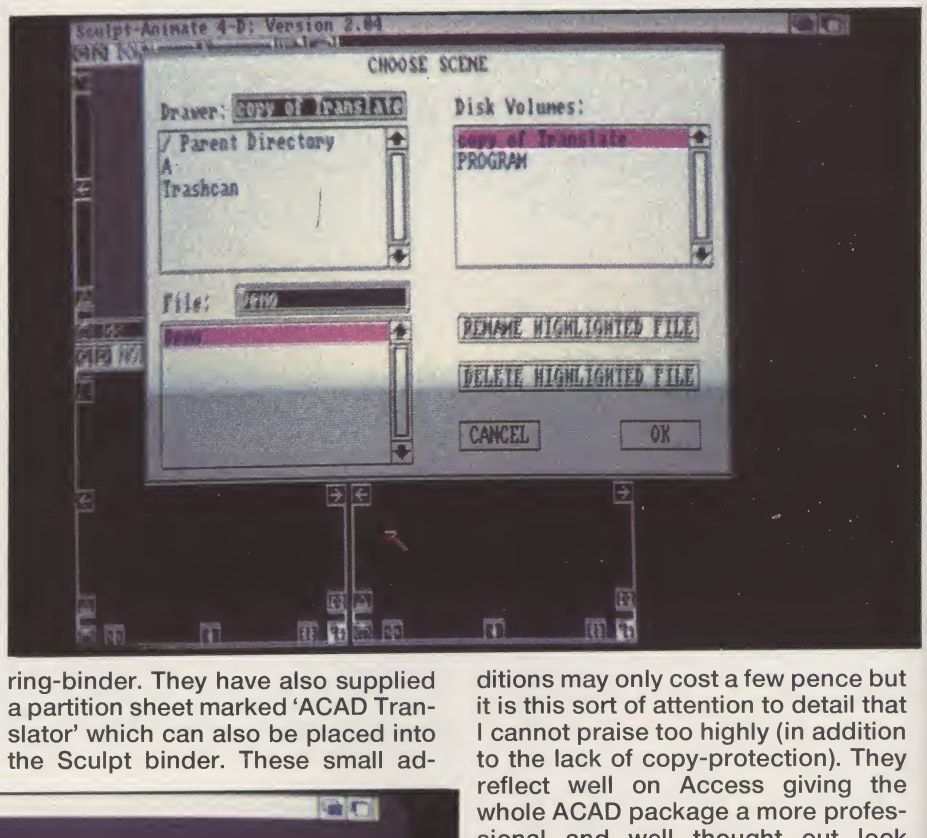
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ACAD Translator

Paul Rigby turns 2D into 3D with Access Technologies' latest graphics offering.

Imagine you have drawn a three view (plan, side and end-view) of an aircraft or, maybe, a house. You have used a 2-D CAD (Computer Aided Design) drawing package to create the images and you now wish that you could turn the three 2-D drawings into one solid, 3-D image. What do you do? You reach for Access Technologies' ACAD Translator. Why? Because ACAD enables you to transfer any CAD drawing, (created on an Amiga, PC, Apple Mac, UNIX compatible, Sun and Apollo workstations, etc), *which can be saved as an AutoCAD 'DXF' file* to any one of the, ever expanding, Sculpt-Animate series. Using the AutoCAD DXF file as the common medium is a sensible choice as AutoCAD is the industry standard. Consequently, you will find that 99% of all known CAD programs supports this format.



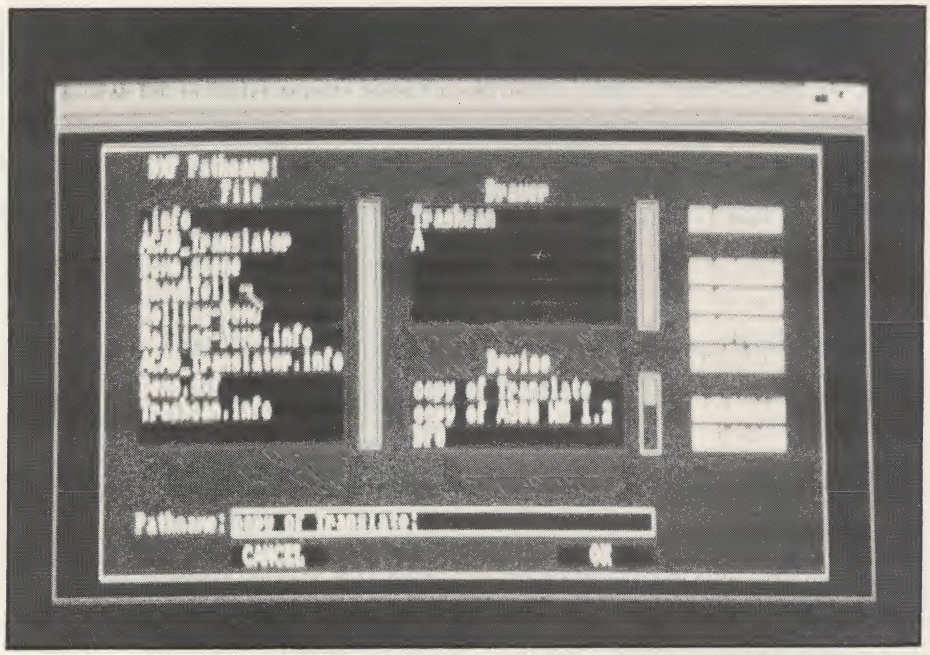
The ACAD Translator arrives in a sturdy box with one program disk, which is not copy-protected, and a 26-page manual. In addition, Access have thoughtfully punched holes in their manual for entry into the Sculpt ring-binder. They have also supplied a partition sheet marked 'ACAD Translator' which can also be placed into the Sculpt binder. These small additions may only cost a few pence but it is this sort of attention to detail that I cannot praise too highly (in addition to the lack of copy-protection). They reflect well on Access giving the whole ACAD package a more professional and well thought out look about it.



Getting Started

Firstly, then, you must save your 2-D CAD drawings as a DXF file. Transferring the DXF file to your Amiga will be the most difficult part of the operation. For those of you transferring PC files you can use the PC Bridgeboard in an Amiga 2000 to do a file conversion to Amiga format. Similarly, with an Amiga 500, you can use the Amiga's PCCopy and PCUtil (found on the Amiga Extras disk) to read the MS-DOS file. You may need an external 5 1/4 inch disk drive to hold the PC disk if you cannot place it on 3 1/2 format. For Apple Mac files you may be able to use an emulator but I didn't try this method (if anyone will/has please write in). If all else fails you can use a modem transfer.

After you have transferred your file you can load ACAD into your Amiga. The first screen you meet shows a list of files present on the disk, the disk drawer, device, a set of commands for ACAD which include Parent, Delete, Rename, Copy, MakeDir, Execute and Abort. Finally, a pathname box lies at the base of the screen which will hold the file you are going to translate. After you have found the file that you wish to convert, in the DXF pathname file box, and clicked on it, it will be transferred to the Pathname box at the base of the screen - ready for translation. However, the particular file must now have its 'DXF' extension changed to 'SCENE', so that it can be read by Sculpt-Animate. This is done by simply erasing the DXF extension and typing in the word SCENE after the file name.



Stage Two

Once that's done you will be moved to the next stage were you can select a number of options. You may be happy with everything as it is in which case you would just click on the OK button and that would be that. However, if you wish to alter the drawings within your file you can access a variety of options via the Parameters button. Here you can magnify the drawings making them larger or smaller. If, for example, the final Sculpt tri-view looks too small, you can re-enter the ACAD Parameters and increase the magnification.

Another choice open to you is to set the number of Circle Subdivisions. This is an important feature as Sculpt-Animate does not recognise true circles. What ACAD does, therefore, is to change any circles or curves into short line segments. Obviously, the more subdivisions there are the more circular the drawing will look. However, the trade-off is that the final translation will take longer and use more memory. Then again, the more subdivisions included in the file, the more realistic the final Sculpt rendering will look like.

"To make the job easier, you might wish to divide the job into sections or layers, like peeling an onion."

There are further, advanced instructions. One example is the 'Layer Selection'. Layers are formed, within a 2-D drawing, when you are constructing a very complex image. For example, if you were drawing a skeletel view of a modern combat aircraft you would have all kinds of avionics to consider. To make the job easier, you might wish to divide the job into sections or layers, like peeling an onion. Overlaying several images over successive drawings builds up the whole picture. ACAD has the facilites to deal with these layers as seperate entities. You can make colour and texture modifacations for each layer. You may have a drawing consisting of 15 layers. You can ask ACAD to disregard layer eight, for example, and ACAD will not translate this layer. Changing the layer's colour is simply a matter of juggling with a set of colour sliders presented to you. The texture box presents a variety of textures to you. You just cycle through them choosing the one you want.

In addition, you can manipulate any 'blocks' that may exist within your picture. To explain, imagine that you have drawn a house. The house is quite large and grand with many complicated windows, fluted columns and weird and wonderful gargoyles. To draw each of these features on the house itself, as one complete picture, would result in a waste of time. Okay, you can zoom/blow up each window, or whatever, and work on it individually. But what if there are 50 windows? They will all end up different and it will simply take ages to draw. So, instead, you draw one window and replicate it. Basically, using it as a rubber stamp, clicking on the area of the house you wish them to be. However, the CAD program looks at these pictures as seperate items. They are not part of the original house drawing. They are 'blocks' which have been stuck on afterwards. So too with the columns and gargoyles. The finished drawing is like a jigsaw. The advantage is that ACAD can manipulate each block so that you will have the finished, rendered 3-D picture that suits you best. For example, you might think that a house with 15 fluted columns looks very nice on the 2-D drawing but, my goodness, how long will it take to render in Sculpt?!? You might decide to tell ACAD, therefore, to ignore 10 of the columns (blocks). Rendering time is reduced therefore. Similarly, you can dabble with the colours and textures.

Conclusion

ACAD Translator is one of the most valuable tools available for the person using CAD on a regular basis. The possibilites that result from being able to transfer 2-D drawings to 3-D images are tremendous. Being able to construct the basic 2-D forms using the advanced tools of many 2-D CAD packages will also be a great boon for many 3-D sculpters. To convert 2-D drawings to 3-D images and then manipulate them using the graphic power of the Amiga would cost thousands of pounds on a PC-based system. That, and the ability to transfer drawings from other high-end systems (Sun, Apollo, etc), means that the Amiga becomes further entrenched in the marketplace. This will do no harm to the future of the Amiga and will, indeed, enhance its reputation as am excellent home and corporate machine (in an enviroment where portability is smiled upon). Well done Access - next please!

P.R.

Price: £139.00 (including VAT). Contact: Amiga Centre, Scotland, #4 Hart Street Lane, Edinburgh, Scotland, EH1 3RN. Tel. (031) 557-4242.

MENTOR

Model Building for a Relational Database

Part I

Susan Maxwell begins a series on the 'business' of programming the Amiga

A data-base is essentially just a collection of data items. The term does however imply certain characteristics regarding the logical representation of the data which are recognized as being extremely worthwhile from a practical viewpoint. In theory at least, people and organisations collect data in order that it may be used - so as well as being able to store information it is necessary to have the means available for adding, deleting, and retrieving items of interest. There is no reason why you cannot write your own programs to do all of this, but nowadays most people will opt for a ready made software package to do the job. The environment which such packages provide is called a data-base management system (DBMS). Such systems vary considerably in terms of the facilities offered so it's worth remembering that when you decide to purchase a DBMS you will be, like it or not, committing yourself to a particular choice of DBMS environment.

At one time the data-base programs available to the 'home- micro/ small business user' were little more than simple indexed file based packages. Nowadays there are packages available which offer considerably more scope to the informed user. If you choose wisely your package will offer many benefits: Your data will be able to be stored in a way which enables the logical structure of the data to change as your requirements change - over a period of time most organisations find new uses for their data. Sometimes new types of data items have to be catered for, sometimes new uses for existing data are discovered. A properly designed data- base will enable you to make such alterations with the minimum of effort and, equally importantly, will enable you to implement the required changes without it affecting your current applications.

The fact that a DBMS is able to provide this type of flexibility results in many other advantages.... you can provide different users with views of the information tailored to their own specific requirements. You can alter one particular view without it affecting other users and perhaps most important of all, you protect the investment which exists in your applications programs because they remain unaffected even if fairly major changes have to be made to the overall logical structure of the data-base from time to time.

There are many types of data-base management systems but there is little doubt nowadays that those which go under the collective name of 'Relational Data-base Management Systems' (RDBMS) are possibly the most powerfull. A RDBMS is a software environment which enables you to implement a logical model representing your data types and the relationships existing between them. The RDBMS acts as a vehicle for the model providing both the mechanisms for implementing the model and the facilities for using it effectively. There is little doubt that, providing you get the relational 'model' correct, a RDBMS will win hands down over alternative data-base arrangements.

Two problem areas exist: Firstly how do you analyse potential applications to produce the necessary 'logical model' and secondly, once you have such a model available, how do you make sure that it is in a form which is suitable for the particular RDBMS in question. Every data-base system will have it's own strengths and weaknesses and with an RDBMS this will include the constraints placed on the types of data relationships that can be handled. Unfortunately a RDBMS is unlikely to either help you to define the 'logical model', or assist you in translating it into a form that can be put into practice.

Model Building

Before you can set up a relational data-base (or any other data-base come to that) it is necessary to know exactly what it is that you wish to achieve. Unless the application is trivial you will need to create a diagram, a 'logical picture', representing both the data-types which will be used and the relationships which are known to exist between them. There are several well established means of producing such descriptions but the notation which we shall use is one of the most common. The overall approach stems from that used by large scale data-base users but the techniques are equally applicable to the models that an individual or small business user would normally require. Logical modelling is a complex subject and there's no doubt that as models get larger the model building process becomes fraught with difficulties but..... when the techniques are applied to small models, such as would be developed on most micro's, they remain easily handled - which usually means they are very effective.

There are a collection of terms which have special meaning within the realm of data-base terminology. Because we need them to describe the modelling process we'll deal with these staightaway:- An 'entity' is basically something which exists in your logical model. Many entities have real life counterparts e.g. CUSTOMERS, INVOICES, SUPPLIERS etc. Other entities exist only within the model itself and usually come into existence to simplify the relationships which exist between other entities.

Each entity will have certain characteristics or 'attributes'. Customers have names, addresses, customer identification numbers etc. Invoices have invoice numbers, dates, amounts, due dates, tax points etc. In general an entity's set of attributes is not merely a static collection of the entities characteristics. It is quite common for both new attributes to come into existence and existing ones to fall into dis-use as the use of the data held within the data-base changes. Less frequently new entities appear as a result of new applications of the data, re-organisation within the Company, or perhaps even an improved understanding of an organisation's data model.

A convenient way of representing an entity and it's associated attributes uses the following bracket notation:

COMPANY
(CompanyID#, Company-Name, Company-Address)

Entity name
Recognized Attributes of the entity are written inside the brackets. The identifying attribute or 'key' is underlined. The hash (#) sign is simply a shorthand way of writing 'number' so CompanyID# is read as 'Company ID Number'.

Unless an organisation only needed a single occurence of a COMPANY data type in its data-base it must have some way of distinguishing one company record from another, i.e. there must be some identifying or 'key' field within the entity description. To make it obvious which field has been selected we simply underline that particular attribute. There are no fixed rules about which attributes you select as identifiers other than the fact that the resulting key must be unique. Some choices are however found to be better than others..... With Company-name we run the risk that more than one company might conceivably have the same name. In the unlikely event that we used the Company address then we'd hit problems when the company changed premises. All of these types of problems are solved by most organisations in a fairly obvious way..... they create additional attributes which are actually under their control. Such entity descriptions thus include attributes such as Customer-Identification-Numbers, Invoice-Numbers, etc. Sometimes pure numbers are sufficient, sometimes it's more convenient to use an abreviated text form (e.g. K Morgan & Sons Ltd. might be assigned KMS001). On other occassions it is necessary to use such things as check digit based identifiers so that it becomes impossible for a data-base application program to accept a mis-typed or otherwise incorrect record identifier.

There are certain steps which may be taken to ensure the maximum amount of 'flexibility' in the entity descriptions. The technique, called 'Normalization', can be applied to all types of data-base (and non-data-base) descriptions but it assumes an especially important role in the design of a model for a relational data-base system.

To illustrate the process we'll take a specific example and explain what has to be done: Let's suppose that you, or your organisation, use a collection of Maintainence/Service Companies which provide you with additional technical expertise. The contacts within these Companies sometimes need to be reached outside of the normal working hours - so you and your collegues need up-to-date lists showing the Companies, the where-abouts of contacts and various other items of information. Here's an example listing of the type of information needed:

Company Identification Number:		**0024**
Company Name:		**Albright & Sons Ltd.**
Company Address:		**15 Mark Lane, Southampton**
Company Description:		**Hardware Diagnostics**
Last mailshot number:		**14**
Last mailshot date:		**16-10-88**
	Contact Name:	**Wilson J.B.**
	Address:	**27 Davenport Lane, London E12**
	Telephone:	**01-547-8585**
	Company related info:	**None**
	Contact Name:	**Jones T.**
	Address:	**347 Fairfax Road, Galleywood, Essex**
	Telephone:	**0405-612457**
	Company related info:	**None**
Company Identification Number:		**00234**
Company Name:		**ESP Ltd.**
Company Address:		**40A High Street, Chelmsford, Essex**
Company Description:		**System Consultants**
Last mailshot number:		**14**
Last mailshot date:		**16-10-88**
	Contact Name:	**Peters T.F.**
	Address:	**27 Denby Close, London E15**
	Telephone:	**01-312-4831**
	Company related info:	**None**
Company Identification Number:		**00254**
Company Name:		**AKL Limited Company**
Address:		**40A High Street, Chelmsford, Essex**
Company Description:		**Remote diagnostic specialists**
Last mailshot number:		**14**
Last mailshot date:		**16-10-88**
	Contact Name:	**Peters J. J.**
	Address:	**The Farmhouse, Mary St. Peters, Hertfordshire**
	Telephone:	**0645-341258**
	Company related info:	**None**

continued on page 72

continued from page 71

You have a policy of notifying the service companies etc., about any 'in-house' changes made to your methods of operations so that external engineers etc., have as much information to help them as possible. This notification is done via a simple 'mailshot' and the only details needed to be kept are the identification number of the most recent mailshot - and its send-out date. You would also like to be able to keep a record of certain unspecified information relating to these contacts and their work.

Our job is to create a model of the data provided so that we can identify the data types and relationships needed to provide a similar report from the information if it were held on a data- base. A good first step is to write down a bracket description of the information embodied in the example listing based on an entity type which we shall call COMPANY: This is the result.....

COMPANY (company#, co-name, co-address, co-description, mail-shot#, mailshot-date, (cont-name, cont-address, cont-telephone, CR-info))

The brackets placed around those attributes related to the contact's details are a notational device to indicate that this particular set of attributes may occur more than once in a single entity occurence. Such attribute sets are called 'repeating groups.' It is a well known fact that the storage of data items which include such arrangements causes data-access difficulties.

The first stage of Normalization seeks to eliminate such potential difficulties by removing any repeating groups from the entity description. It is done by creating a new entity and transferring the offending repeating group attributes to it, like this.....

COMPANY (company#, co-name, co-address, co-description, mail-shot#, mailshot-date) **COMPANY-CONTACT** (company#, cont-name, cont-address, cont-telephone, CR-info)

Notice that the new entity COMPANY-CONTACT also includes the original entity's identifier 'company#'. If we had not done this then we would have lost the information concerning the particular company involved. Although it is a general rule that the original entity's identifier must be included in the new entity formed, we do not necessarily have to make it part of the new entity's key - unless this is one of the attributes which MUST be specified to uniquely define an occurence of the new entity. In our example we don't know too much about the 'Company Related Info' attribute so we take the view that it is dependent on both the contact name AND the companyID#.

The second stage of the Normalization process is concerned with the relationships which exist between an entity's designated key attribute and the remaining, i.e. the 'non-identifying, attributes present. The object of the exercise is to make sure that every non-identiying attribute present in the description is functionally dependent of the whole of the identfier. If you look at the non-identifying attributes in the entity COMPANY-CONTACT you'll notice that contact's address and telephone number are dependent only on the contact's name. We can rectify this as before by removing the offending attributes and creating a new entity CONTACT.

COMPANY-CONTACT (company#, cont-name, CR-info)

CONTACT (cont-name, cont-address, cont-telephone)

At this stage all non-identifying attributes are functionally dependent on the whole of the selected key. They are said to be in second normal form (2NF).

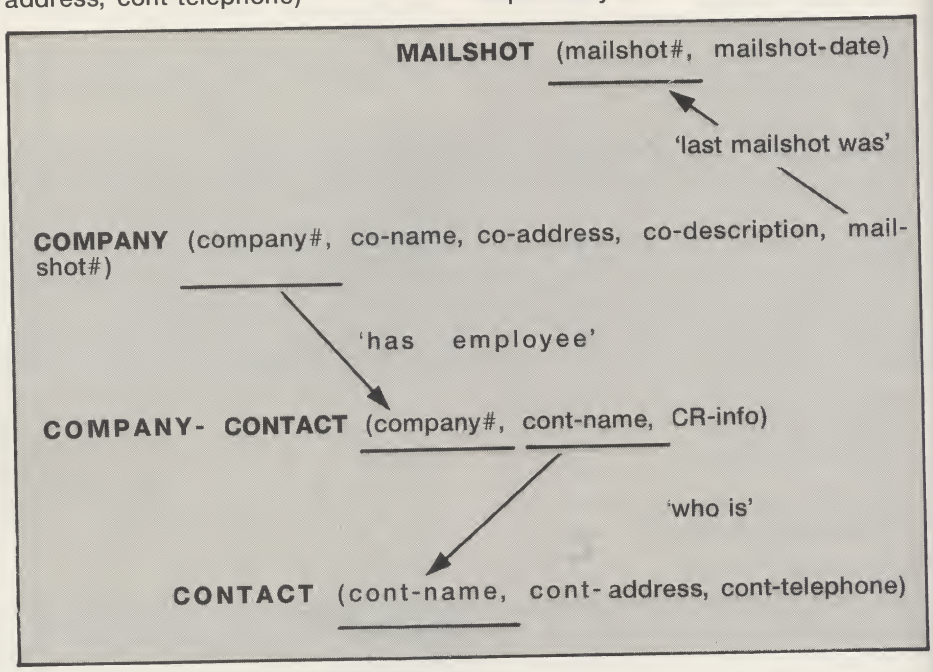
The third and last stage of the Normalization process looks for functional dependence between non-identifying attributes. Because mailshots are made to ALL companies at the same time there's one obvious candidate..... knowing mail-shot# would fix the mailshot-date value so a dependence exists between those two attributes. Having both items present in every occurence of COMPANY would actually result in un-necessary data duplication so we eliminate it by creating yet another entity, MAILSHOT, like this.....

COMPANY (company#, co-name, co-address, co-description, mail-shot#)

MAILSHOT (mailshot#, mailshot-date)

The overall result of our manipulations can now be stated..... we have produced an expanded entity set whose attributes are free from any repeating groups , are dependent on the whole of the chosen identifiers and whose non-identifying attributes are mutually independent. Such entity descriptions are said to be in third normal form (3NF)

Relationships which exist between a collection of entities can be described using single and double headed directed arrows to represent 'to-one' and 'to-many' relationships respectively.....



In a real life situation this analysis might be just one of many hundreds of areas examined and the results of the examination would be looked at in relation to the overall or 'global' requirements of the organisation. For our purposes though the next stage is to actually implement the above 'model' with an RDBMS. Next month we'll have a look at what must be done to implement such a model when you are using packages such as Taurus Impex's Acquisition package or Abacus's Professional DataRetrieve program. ***S.M.***

Movie Clips Volume 1

The casting is over and the extras all lined up for you to usher in a new support disk for MovieSetter. Peter Lee views the rushes.

'With full supporting cast' is one of those film cliches which can now be coined in support of the tremendous Amiga package MovieSetter. Regular readers will recall our Test Drive in the March issue of ***AUI*** of Gold Disk's imaginative and easy to use animation program. Featuring scrolling backdrops and looped animation sets, it found favour immediately.

A number of sequences were included with the program, but these offered limited scope, and in reality were of only major use in exploring technique and enjoying the fruits of



the program. But however simple it may be to create your own animation sequences, it is always nice to have several alternatives available when constructing movies - hence the release of a series of animations, backgrounds and sounds on a new clip disk from Gold Disk. The disk is chock full of examples, but just how useful they will be depends on your aims. For example, a caveman cavorting about the screen is hardly going to be of much use in a presentation to the Managing Director!

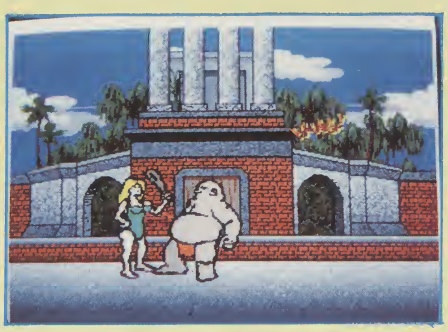
It is very much aimed at the enthusiast into developing his or her animation skills, with an emphasis on cartoon fun.

The Set

There are two actual productions - or movies - on the disk, and while showing a number of the sets and effects available, they can also act as templates for users wishing to substitute their own backgrounds, characters or sounds. One demo works on a 512K machine, the other on Amigas with over 1 meg of memory. They are simple but effective, and display MovieSetter's fine points to the full - scripted storyboards, with sound synchronised to movement of characters which animate independently from each other in front of a scrolling background.

The disk has five backgrounds, though one is a somewhat crude title circle, through which a mouse can push its head (in a spoof of the MGM lion); there is a planetscape, space city, normal city (though what it is supposed to be escapes me) and pre-historic background. Sets of animation associated with this diverse scenery are well-drawn, of a good size and beautifully animated.

There are space men and women, cavemen and women, prehistoric monsters ambling about and lots of visual sound effects (for instance *Ugh!*, *Eeeeeee* and of course the



ever-popular word *Aaarrrgghh!*. Aural sound effects are good, with growls and gunshots, plus a heartbeat and wingflap (for the pterodactyl. Finishing off a crammed disk are a number of props - stationary objects to be placed at will - a few rocks and a piece of wood.

Conclusion

The items I found of most use were the sounds. Anyone like me without a sound digitiser is a bit lost for special FX, and they do actually add a great deal to MovieSetter presentations. The backdrops are simple in the extreme, with the two city backdrops



the most interesting. They are hardly convincing, however, when scrolled as they show individual objects and not a general non-specific scene. The animation sets themselves are cute, and thanks to MovieSetter's set-editor, easily altered to any degree you like; the good thing is that the movement has been captured, and you can build on this given patience. MovieSetter has won many friends, and I stick by my appraisal of it as first choice for fun animations. The Movie Clips disk builds on that, and should prevent boredom and frustration setting in.

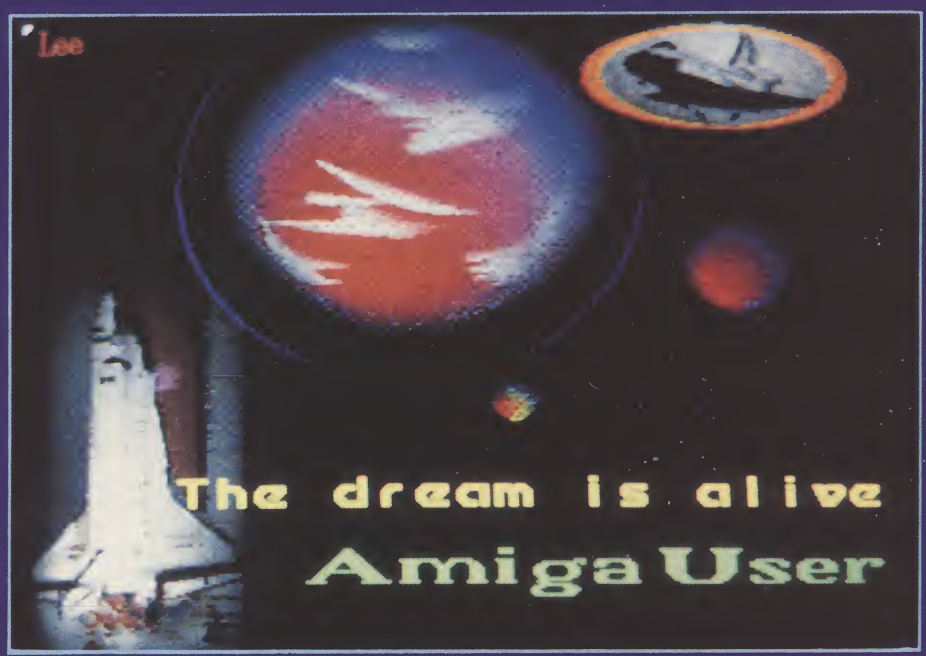
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Digi-Paint

Two heavyweight art packages are battling it out, HAM to HAM. Peter Lee officiates ...



The HAM mode is fighting back! Two art packages have been released within the space of a few weeks that capitalise on this under-used graphics mode, and which should make even the most hardened lo-res stick-in-the-mud sit up and take note.

In the August of *AUI*, we took Microillusion's Photon Paint 2 through a thorough test; many enhancements and the addition of animation made it for the first time a real contender with Deluxe Paint III. Now the development team at NewTek have released the fruits of their labours - Digi-Paint 3, which is as welcome as it is unexpected. The makers of the highly popular Digi-View have surpassed all expectations with the upgrade of their art package. Although Digi-Paint lacks any of the animation tools of Photon Paint, the two are set to be arch rivals in a field where they both excel.

D-P3 Revealed

D-P3 comes on an unprotected disk, which can be installed on a hard drive, and requires a minimum 512K machine; optional hardware which will clearly help are an extra drive and more RAM. It is a tribute to the coding that the powerful utility will run on such a bare machine. NewTek also included a disk that features a slideshow and an image processing program called Transfer 24, which I found a very useful freebie, but more on that later. PAL screens are supported, together with overscan images for video-dumping without blank screen edges. The program is accessed through a set of well-designed panels which prove comfortable and intuitive to use.

Icons are used in the main, but various global options have to be accessed through pull-down menus, and these also house the complex painting commands. All in all, the program has been given a complete overhaul, and is barely recognisable from its earlier version. It has been beefed up and given a much better user interface where self-explanatory icons add greatly to clarity.

Another step in the direction of user-friendliness has been the simplification of the palette control. After all, with 4096 colours to play with, you need it to be as easy as possible. New, too, is the fine colour range tool, and the highlight (or hotspot) control has been turned into a well-implemented and simple to use point-and-go feature.

So, it's time to put your prejudices about HAM aside, and try and visualise the often-stunning effects of which D-P3 is capable. The program has the usual set of drawing tools: freehand; rubberbanded; rectangle; circle and ellipse; these can all be open or filled with either a solid colour, range or a brush. Brush shapes depend on whatever tool you use to cut them out - you can just as quickly lasso-cut an area as defined a rectangle. Unlike most other drawing packages, the brush does not default to following the pointer as you move around the screen, but can be made to do so by keeping the right mouse button pressed. This is a minor quirk, though one which causes no real problems once learned.

The actual brush can be pasted anywhere on screen, though the sophisticated rotation aspects as found in Deluxe Paint III are lacking; 90 degree flips are available, but not direct skews as one would have liked.

HAMming it up

The true sophistication of the HAM mode are really apparent when it comes to manipulating the brush. But first you need to copy the brush in memory so it can be manipulated, and this is achieved via a pull-down menu. In addition, the program allows a high degree of definable transparency, selectable

by means of a slider gadget alongside a control sphere, on which a hotspot can be placed. This feature allows a highlight to be placed anywhere on the brush as it is drawn; ideal for simulating a light source, and essential for creating a feeling of mass in a solid object represented on the two dimensional screen. The same sphere also houses an edge transparency slider, which lets you add subtle degrees of shade toning to a brush, and again helps give the effect of depth.

"A good deal of experimentation may be necessary to provide you with the result you need."

Alongside this control sphere is a similar large panel accessing the warp and texture mapping facilities. A slider gadget controls the degree of warping on the brush in memory (via the pull-down option TxMap). Using these gadgets is easy, but predicting the results are not. A good deal of experimentation may be necessary to provide you with the result you need. There is a large amount of warp control available - horizontal, vertical or both, each featuring a fine-tuning cursor which, like the hotspot, can be located anywhere on a large diagramatic sphere to localise the effect. This was too abstract for me, but produced some remarkable effects, even if I couldn't quite work out how they had been realised ! Custom brushes can be used as the basis for tile rendering; a possible grid Antialiasing can be activated on these brushes, giving a delicate smoothing effect, and something well worth the extra few seconds it takes to achieve.

Grids of of up to nine by nine images can be defined, and used to fill any shape you draw, from the whole screen to a small rectangle. The warping effect works on these multiple images too, offering some bizarre output. Even stranger effects can be generated by aborting a warped fill, and then continuing it after editing some of your parameters. This is one for abstract freaks I suppose.

Repeat

Running parallel to these effects is something even more powerful - the Repeat function. This works on the whole range of actions, and does just what it says - duplicates the last action. The real plus here is that meantime you can have undone the action itself, and edited a whole new set of parameters. On a simple level you may have used the wrong colour for a fill; selecting the right one and then clicking Repeat will do the job properly. But more importantly, major alterations such as brush rendering can be undone and repeated constantly until they are satisfactory.

A final example: the program has a clever colourise option, which will allow you to change the colour of the selected area - ideal for toning black and white digitised screens as the intensities of the pixels are unaffected. It is similar to putting a coloured sheet of acetate over an image.

But perhaps you chose too dark a pink to colourise a face; just by undoing the effect, selecting a better colour and opting for Repeat, the whole job is done again, avoiding the need to trace around your colour-fill outline again.

Repeat also has another nice feature - the ability to build up



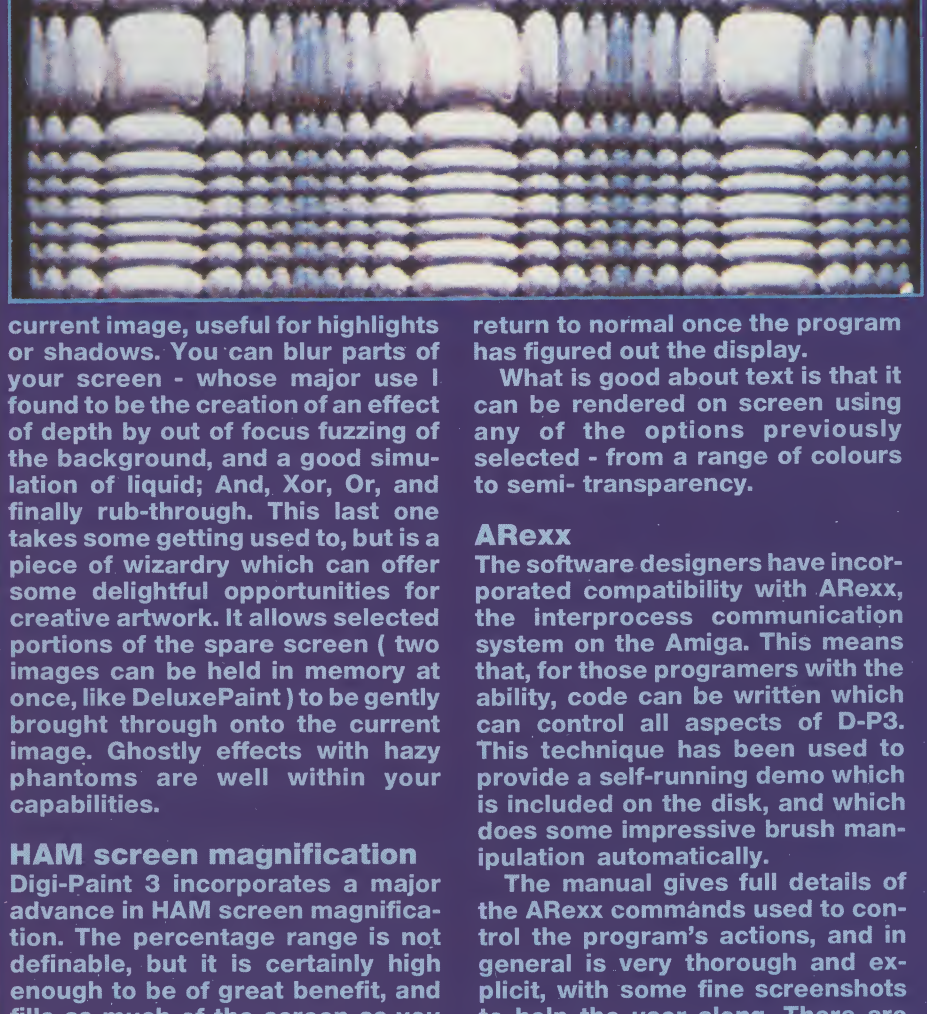
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layers of tints until the right tone is reached. Just keep on repeating with the same colour in light transparency mode, and stop when the desired degree of tint is reached.

Drawing modes

A look at the drawing modes themselves reveals some useful options. Normal allows brushes and colours to be drawn as they were cut, Range is capable of exquisite fills moving smoothly from one colour to another, and there are options to Lighten or Darken the



current image, useful for highlights or shadows. You can blur parts of your screen - whose major use I found to be the creation of an effect of depth by out of focus fuzzing of the background, and a good simulation of liquid; And, Xor, Or, and finally rub-through. This last one takes some getting used to, but is a piece of wizardry which can offer some delightful opportunities for creative artwork. It allows selected portions of the spare screen (two images can be held in memory at once, like DeluxePaint) to be gently brought through onto the current image. Ghostly effects with hazy phantoms are well within your capabilities.

HAM screen magnification

Digi-Paint 3 incorporates a major advance in HAM screen magnification. The percentage range is not definable, but it is certainly high enough to be of great benefit, and fills as much of the screen as you choose, using its own window. Tools can be used as normal in the enlarged window, though the fringing effect noticeable with HAM can be confusing when it pixels are so large. Surprisingly, text is handled in a clumsy way. The program comes with some interesting typefaces, but the program can access fonts in any director or volume. What is strange is that the text is input in a small window at the bottom of the screen, and then is converted into a brush in the font style of your choice. It is alarming to see the line of text being blocked out at the top of your screen image, but this is just a momentary usage of the screen and things quickly return to normal once the program has figured out the display.

What is good about text is that it can be rendered on screen using any of the options previously selected - from a range of colours to semi- transparency.

ARexx

The software designers have incorporated compatibility with ARexx, the interprocess communication system on the Amiga. This means that, for those programers with the ability, code can be written which can control all aspects of D-P3. This technique has been used to provide a self-running demo which is included on the disk, and which does some impressive brush manipulation automatically.

The manual gives full details of the ARexx commands used to control the program's actions, and in general is very thorough and explicit, with some fine screenshots to help the user along. There are also a few smaller touches in the program: pointer co-ordinates can be displayed, and by turning on a Genlock option (after all, New-Tek are responsible for probably the most popular Amiga digitiser - Digi-View) the program blocks any use of colour 0, never using it in any painting operations.

And to end on a high note, images larger than the actual screen can be created; not just in overscan, but truly large canvasses which can be scrolled around for editing. Pictures can be resized at any time, with an option for Interlace if your eyes can stand it.

TRANSFER 24

A nice bonus with the program is the inclusion of an image processing utility called Transfer 24. This will be familiar to users of Digi-View Gold, but in the context of the art package, it finds another valuable niche.

The program features a display mode converter (even though Digi Paint 3 can load in any IFF picture and convert it automatically to HAM), together with colour, contrast and brightness controls for tweaking your pictures.

CONCLUSION

Coming so close on the heels of Photon Paint II, Digi Paint 3 adds some stiff competition in the HAM field. The major disadvantage faced by D-P3 is its lack of animation features. Otherwise it has a lot to offer: it has a better user interface, and to be honest I found it more fun to use than Photon. While it is possible to be creative with brush warping and pseudo perspective painting in Digi-Paint, it lags behind its rival's assortment of brush manipulation tools. So if animation is not a consideration, and ease of use is, then Digi-Paint3 will be the choice. In their own way both programs offer a great deal, and any dealer should be glad to boot up both to give you a comparative test, which is the only way you will be able to choose the one best suited to your needs. My personal choice is for Digi-Paint 3, for a number of reasons: I found the user-interface a dream to use, especially the highlight option; I tend not to use too many HAM animations because of the amount of time it takes to create a sequence of frames, so I did not miss this feature; and finally it seemed a more friendly way of coming to terms with HAM than Photon Paint's somewhat clinical approach.

P.L.

Price: £79.95
Contact: Most Amiga dealers stock Digi-Paint 3.0.

MASTER FONTS 3D VOL.1

Having a group of pre-set fonts readily available to the 3D modeller can be a boon as it saves having to design them yourself. Having spent hours creating your masterpiece on Sculpt 4D the last thing you want to do is to have to worry about forming the relevant set of characters to accompany your piece. T.S.R Hutchinson of Houston, Texas have provided us with a set of three fonts which include letters, numbers and incidental characters.

The package arrives in a simple envelope/folder which contains the solitary disk. Nothing else is included. The brief instructions are printed on the front of the envelope, itself. The choice of the fonts that T.S.R. have provided on the disk will hardly set your heart aflame. They are the horribly old-fashioned 'Computer' font, which you tended to see splashed on all of those 'futuristic' television series, books, and so on during the seventies ; the LED-type 'Digital' font which is alright but you still have to stifle a yawn when you see it and, finally, the 'Lectric' font. The latter font is the most interesting of the three as the characters look as though 50,000 volts have been pushed through them - jaggardy and spiky, you might say. I can imagine one or two horror scenes being depicted within a short animation with 'Lectric' adding dramatic declarations in the foreground.

Master Fonts are directly compatible with Sculpt files so they can be directly loaded into any of the Sculpt series. They can also be used within other 3D programs such as Videoscape 3D and Turbo Silver. However, you will need to purchase a conversion program to do this. One candidate for this job may be Interchange from Syndesis, which will set you back about £50.00, or so.

When loading the fonts into Sculpt 4D you can load them as you would any object. Placing the cursor in the three-view (Tri-View) and then proceed with the load. The letter will then load after which you can use the 'extrude' command of the 3D program to give them a bit of a solid look.

Master Fonts 3D is a good idea, especially as there looks as though there will be more in the series, enabling you to stock up creating a small library. Opinions as to the choice of fonts are largely governed by personal taste, I know. My feelings are that the included fonts represent poor value for money, as far as Volume 1 goes. They are pretty boring and only have a minimal scope for extended use. They are not, on the whole, exciting enough to be used for 'Fun' productions and they are not 'classical' enough to be used for everyday use, as Times or Helvetica would. However, maybe the rest will follow in later volumes. The instructions are very poor. T.S.R. Hutchinson may say that anyone who delves into the world of 3D modelling will be able to cope with loading 3D fonts. Fine, many will. But I think there is a lack of professionalism when any company *assumes* with a product. Master Fonts should have a full set of step-by-step instructions which take you by the hand, with illustrations, if possible.

P.R.

Price: $34.95 (U.S.). Contact: T.S.R. Hutchinson Co., 110 West Arrowdale, Houston. TX. 77037-3801

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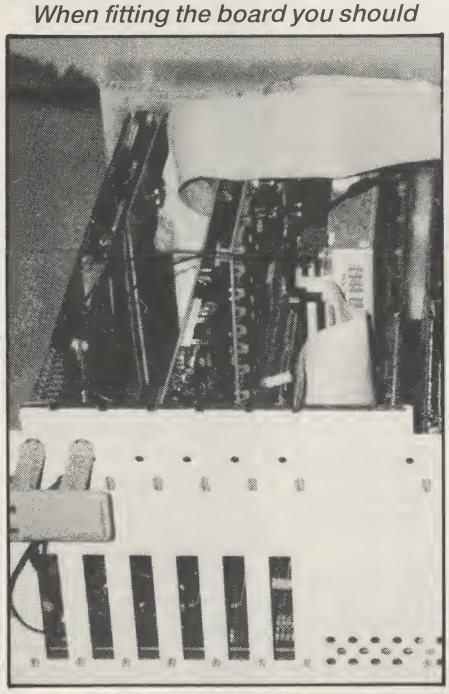
are becoming widely used in cars. Alternatively, these can be removed with a small terminal screwdriver - adapted with a small file.

Now, locate and remove the 68000 as demonstrated in the diagrams supplied with the manual. The chip should be removed with extreme care, and although gentle leverage with a terminal screwdriver can be used, I would recommend borrowing an IC extractor if possible.

Finally, fit the Accelerator board in the socket vacated by the 68000. This must be done very carefully and in a static-free environment; that is, preferably on an earthed bench. If this is not possible do not wear any nylon clothing or at least choose a humid/wet day when static discharges are less likely.

NEVER attempt to earth yourself by touching a mains outlet! This may seem perfectly safe but if your household has just a slight wiring fault - which has been known - you could end up an ex-reader; and that would never do.

When fitting the board you should



make sure it does not snag any of the Amiga's components. On the machine we tried, a small (10uF, 16V) radial leaded electrolytic capacitor, had to be bent over very slightly. This brings up two important points: first, be careful not to damage the any existing components - including the old 68000 - and second, if you did not understand the previous sentence word-for-word, do not attempt this modification yourself.

Lastly, before you put the whole thing back together, check the positions of the two 'jumpers' are set according to your requirements. Remember, if you re-assemble the machine - and then find you have made a mistake, you will have to take the whole thing apart again. Re-assembly incidentally, is just the reverse of the dis-assembly already described. However, you should be careful to align the keyboard connector properly - this can give rise to some real headaches. All that remains is to switch on and go ... ***M.S.***

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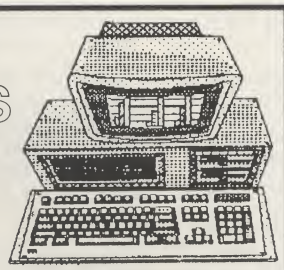
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Talespin

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Everyone, so the saying goes, has a story in them somewhere. Some of us become famous authors because we cant stop thinking up tales, some of us see films and think 'well I can do a whole lot better than that story' and get a one off success, whilst some of us put our considerable talents to good use writing and programming exciting computer adventures. Then of course there are some of us who do not have the talent for programming, yet still have this tale to tell, or this fantastic puzzle scenario , or an epic, or murder mystery bursting to get out. What do we do?

TALESPIN is a package that combines dawings, text and sounds into a series of pages to form a true interactive adventure. The major difference is that you play the game without typing in text, you just use the mouse to click on the actual drawings or text to further the story. In this way the graphics play an integral part of the story and are not just there for cosmetic decoration. The program carries its own art package,(although you can import your own pictures) and it also contains some limited sampled sounds, however the author suggests you create your own sounds using another utility and importing the whole thing over.

How does it work? Well Talespin is completely menu driven, and in fact a lot of its charm comes from its user friendliness. Let us take a look at a typical start up situation where you select CREATE A NEW TITLE from the main Control Menu, and then naming your story. Next you let the program know which page is the beginning of your adventure by defining a START page, again from the menu. Now you look at the DEVELOPMENT MENU and select DRAWING DEFINITION which throws up a further sub menu from which you select CREATE NEW DRAWING.

This is so simple it's not true. You get a palette of 16 colours (each of which can be changed in density) and a menu of tools; a pencil for dawing dots and lines a single pixel wide, a spray and mini spray for shading things like hair and trees (the longer you hold down the key the more area gets sprayed in) Line, does just that, straight lines upright or vertical. The Fill option literally fills an area with colour, Block gives you angled shapes, Blob lets you draw thick outlines or rounded shapes, and a Lens option gives a close up of the area where you are working. By a process of creating drawings, saving them and then creating more , you will gradually build up your page. This is really where practice makes perfect, and unless you are well versed in computer art, you will be using the MODIFY option with monotonous regularity.

With your first picture ready you can now add some text. The beauty of the program is that you can have text appearing next to any drawing, so let us assume you have drawn a cat and a mouse for a minute. Select the Cat drawing and a new menu will appear for Cat text operation, this allows you to insert your text to let the cat say something. Repeating the process for the mouse, but using an options command lets you have a series of possible answers to your cats question,(then when playing your adventure later you can run the mouse down the text to highlight which option you want to use.)

Once everything from your first page is completed you can move onto the next page. However, you are no longer starting from scratch as you can use some of your original drawings again and modify them as you wish.

The core driving force behind TALESPIN is the effective use of variables and values, which allows the flexibility in your adventures and turns them into something more than just computerised comic strips. For the uninitiated, a variable is a term that defines what happens when a place in the story is reached like arriving at a gate without a key, which obviously means you cannot enter. Good variable input can make the difference between a cracking good adventure and a poor effort.



The only thing that will hold you back using TALESPIN is your imagination and your skill at drawing. The finished adventure will be a lot different from what you are used to, but I can see that in the hands of a talented user the possibilities are endless. In fact you never know, I may soon be reviewing a home grown Talespin adventure here in the magazine' All credit to Microdeal for this one, an imaginative product that cries out for a talented user.

A.M.

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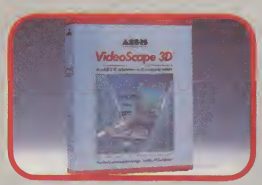
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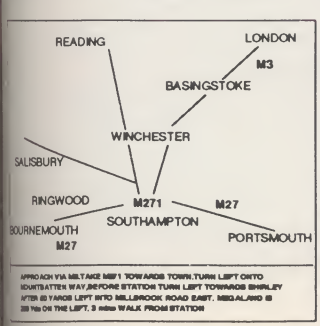
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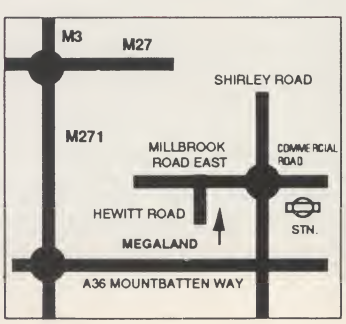
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SLEEPING GODS LIE

Empire

With a command system of absolute simplicity using either joystick or mouse, 'Sleeping Gods' has you beginning as a poor weaponless adventurer, given an opportunity to amass wealth armour, weapons, fame and fortune in a healthy mix of hack and slay and puzzle solving adventuring.

There you are at home in the world of Tessera, when you are awakened by a dying Kobbold crashing through your front door. He begs you to find 'The 'leeper', an old God rumoured to be slumbering in one of the farthest flung of Tesseras eight kingdoms. Only He can save your homeland from the grip of the Archmage and his henchmen.

Not being one to dismiss the promise of adventure, you rise to the challenge and after picking up a few salutary items from your dwelling, open the front door and go about your quest, with 94 landscapes full of bandits, demons and monsters ahead of you.

The landscape is depicted using 3D modelling and solid bit mapped imaging, that does convey well a feeling of distance between you and say a far off objector gateway. Collecting ammo or anything for that matter is undertaken simply by moving over the object in question, to find it appearing in your inventory.

You will always have access to your current most powerful weapon in your possession,although you can change, and as you start with only your hands and some pebbles to throw, as they say in the song, the only way is up! Along the way you get to fight bandits and these guys carry all sorts of goodies, so killing them could get you maybe a sling, or a blowgun, crossbow etc.

The graphics are well drawn, although at times the action can slow somewhat when there is a lot on screen, but not enough to spoil your enjoyment. The sound however is disappointing, as apart from a pleasant opening sequence there is not a lot to shout about except a few explosions and bit and pieces. The text portion of the screen is a strip across the bottom which doubles as your info box, and to the sides are various monitors, like a compass,health check (eating berries and veg, along with sleeping restores your stamina) clock, current weapon, all useful stuff and easy to keep an eye on. I must say that I found the combat system a little twitchy, maybe some collision calculations have got slightly arry but more than a few times I



found myself throwing a last hope missile in the general direction of a fleeing bandit, seeing it miss by a few feet and then seeing said bandit explode into lots of little bits of bandido. And the same can be said for my own damage assessment! You have been warned.

The process of throughplay is fairly linear, in that you can only explore one kingdom at a time; all the puzzles for that kingdom are built in there somewhere, it's just a question of finding them. That done, you then obtain an object that enables you to be transported to the next kingdom, and so on.

There is a curious mapping technique you have to learn as Tesseras directions are not quite what you are used to. This is really confusing at first, but you get the hang of it after a while, along with the time, which seems to be one hour to five of our minutes. There is a nine hour day with a three hour night, and seventeen months of seventeen days in a year! Confused?

Don't worry because all of this is really irrevelant, just concentrate on killing baddies,solving the puzzles and saving a hell of a lot. A joyous romp guaranteed then, sit down with lots of coffee and be prepared to play the night away.

A.M.

Graphics: 9 Sound: 8 Playability: 9
ABSOLUTE VALUE: 8 Price: £24.95

HEARD IT ON THE GRAPEVINE

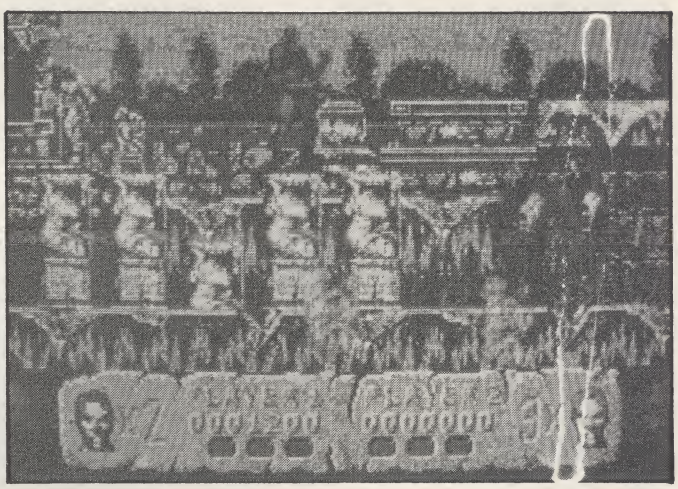
Tony Horgan puts his ear to the vine (in the software jungle ... Africa? ... Sri Lanka? ... South America?) to bring you the latest news

Operation Wolf, Voyager and Dragon Ninja make up an impressive track record for Ocean. However, from what I've seen from their forthcoming projects, these hits are soon to pale into insignificance! Ivanhoe, Adidas Beach Volley and Adidas Golden Shoe are three certain corkers under development.

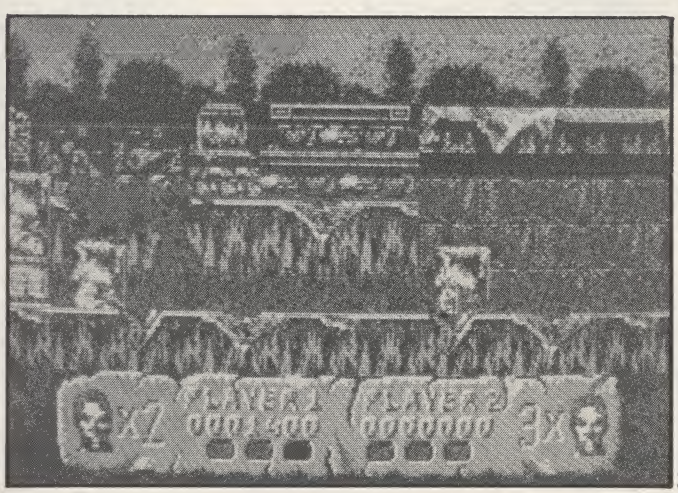
Ocean

Ivanhoe is a scrolling hack 'em down in the traditional Barbarian/Sword of Sodan style. In his quest, your fearless knight slices his way through mile after mile of densely vegetated scenery. The inhabitants of these lands are none too happy with your intrusion, and use any means they can to kill you. That might have done the trick with your everyday bold knights, but you are Ivanhoe. The result of such a clash of personalities is violent bloodbath of good vs. evil.

So what's new? Only the best sprites ever seen on an Amiga, that's all. Believe me, these graphics are cooking! Throughout the forests and wastelands, the villagers, bowmen, scorcers, horsemen and monsters are amazing. Big, detailed, smoothly shaded and proportioned with an excellent cartoon slant, they really are the business. Of course, it is up to the programmers as to how well they move around the screen, but that side of things seems to be coming along just as well. The finished product should be with us soon. We will keep you posted of any developments between then and now.



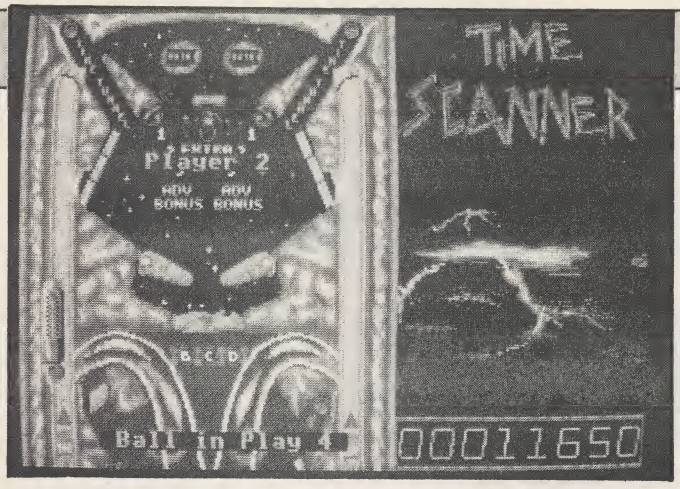
Altered Beast



Altered Beast

Adidas Beach Volley is just as visually stunning, continuing the graphic style of Ivanhoe in a volleyball simulation. When two young volleyball stars are offered sponsorship for a world tour, they jump at the chance. Egypt, England, Russia, Japan and Autrailia are a few of the venues on the agenda for these strapping examples of fitness. Ocean France have gone to town with the presentation, including numerous title screens and a panelled comic book intro. A must for sporting types.

More armchair-exertion comes from the football simulation Adidas Golden Shoe. As the current trend dictates, Golden Shoe uses an overhead view with the pitch scrolling in all directions. In contrast with Kick Off, all the players are very large in relation to the pitch. The loss of a realistic scale is compensated for by the far more detailed graphics. Shades of



Time Scanner

Dunk Shot creep in as the players leap up, out of the screen in pursuit of those high balls.

Imageworks

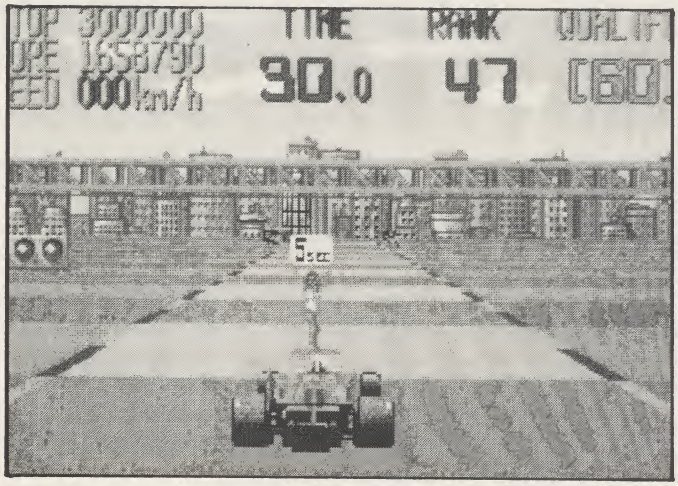
Staying with the sporting theme, Imageworks have their second coin-op conversion on the way: Sega's Passing Shot. As with all Sega games, Passing Shot is a cinch to pick up. It plays like most tennis games, but Sega's characteristic awsome 3D graphics are nowhere to be found; good news for Teque, the boys with the job of the conversions.

Activision

Two more Sega conversions, Altered Beast and Time Scanner, are on the way from Activision. Altered Beast is a fantasy beat 'em up with a gimmicky twist. As the two hunks' egos grow with every successfully landed blow, so do their muscles. Soon, the human forms cannot take any more body building, and transform into werewolves, which continue the rampage with even more gusto. One for mutant lovers everywhere. Time Scanner is a pixelised pinball machine. The tables take you through different time zones, and include all your favourite pinball features, including a tilt facility!

As we go to press, the first screenshots of Virgin's Continental Circus conversions are coming in. The Amiga game is being handled by The Sales Curve, the chaps behind Silkworm, and first impressions are excellent. If you ever wondered why a motor racing simulation was named Continental Circus, it was a mistake. It was originally called Continental Circuit, but a spelling error somewhere along the line somehow found itself in the final product!

T.H.



Continental Circus

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5.	Rick Dangerous	*Rainbird*	(-)	£19.99
6.	Robocop	*Ocean*	(-)	£24.95
7.	Licence to Kill	*Domark*	(5)	£19.99
8.	Sleeping Gods Lie	*Empire*	(-)	£24.95
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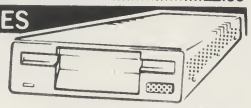
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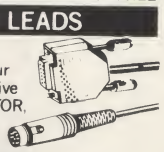


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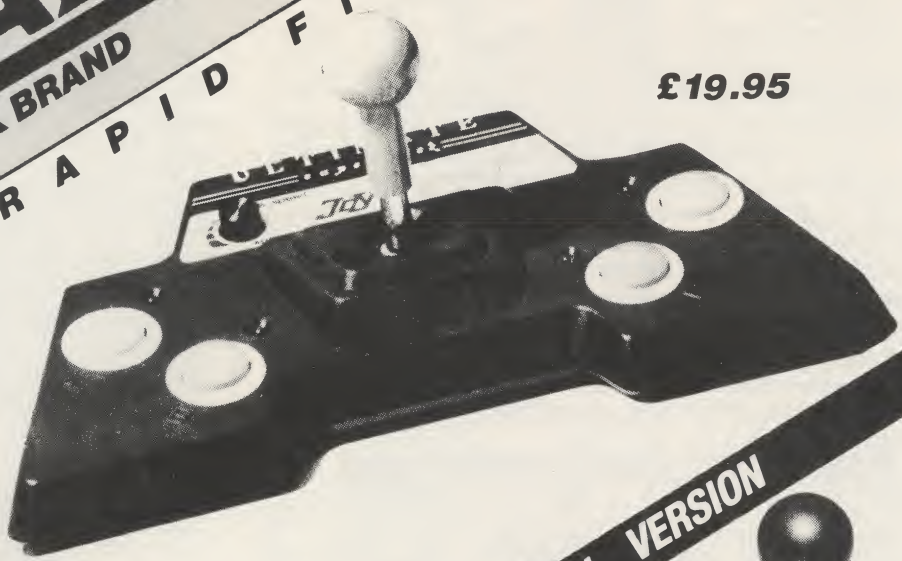
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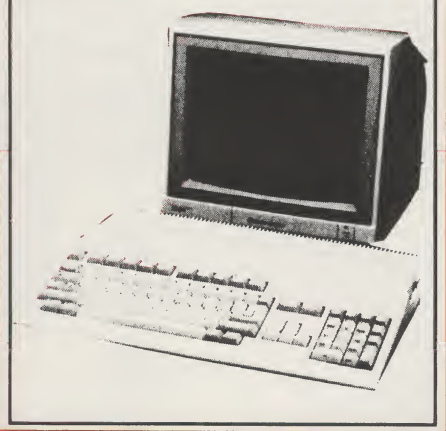
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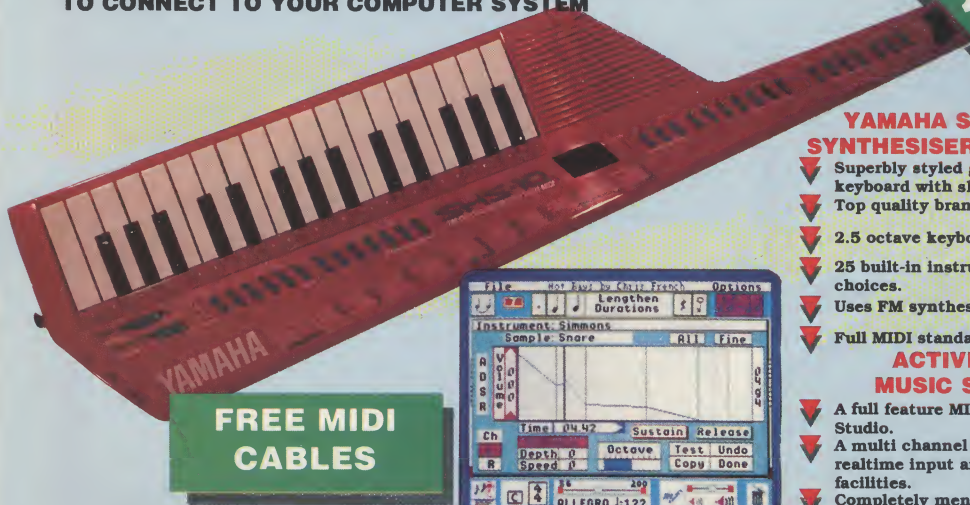
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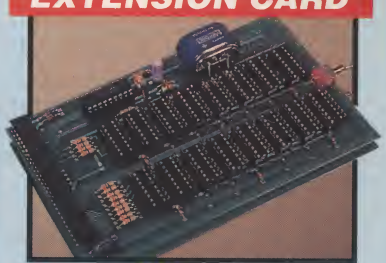
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Amiga Answers

Yuri Large tracks down the tips that keep you on top!

Dear AUI,

We have owned an Amiga for eleven months, and we have a computer club now. We have been reading Amiga User for four months and we like it very much. We have some questions about the Amiga and you can probably help us.

1. We have decided to buy two more Amigas for our club. What is the difference between the Amiga 500 1.2 and the Amiga 500 1.3?

Is it true that the Amiga 500 1.3 uses the new version Motorola 68000 chip?

2. What are the differences between 1080, 1081 and 1084 monitors? Which one is the most durable and which gives the best results with the Amiga?

3. I have been using AmigaBASIC since I bought my Amiga, but I hate the border. Is there a way to close the border while the BASIC program is running?

Best regards,
BARIS ATASOY, TURKEY.

Dear Baris,

1. The difference between a 1.2 and a 1.3 Amiga 500 is simply the version of the Kickstart ROM, Workbench disk and Extras disk supplied with it. That is, a 1.2 Amiga 500 is supplied with the 1.2 version of the Kickstart ROM, Workbench 1.2 disk and so on.

The major addition to the 1.3 Kickstart ROM is the addition of "Autoboot" code. This allows anyone using an appropriate autobooting hard drive or the 1.3 recoverable RAM drive to boot directly from it. Workbench and Extras 1.3 have many major enhancements over the previous versions. In particular the Shell, the FastFileSystem and the vastly improved printer drivers are worth mentioning. All Amiga 500's, no matter what version they are, include the standard Motorola 68000 chip running at 7.16 MHz.

2. Commodore have produced quite a variety of monitors for the Amiga. The A1080 is an NTSC monitor produced by Commodore for the American market and is not suitable for European PAL standard Amigas. The A1081 was the predecessor to the 1084, and was supplied with the original Amiga 1000. However, the A1081 was only suitable for use with the Amiga, and was thus replaced by the 1084, which will display the output of the 64, 128, Amiga and the Commodore PC's. Commodore's current monitor is the 1084S, which features stereo sound output. All of these monitors are similar in quality and endurance, because in the most part they are all manufactured for Commodore by Phillips.

3. There is no way within AmigaBASIC to turn the title bar and window borders off altogether. However a similar effect can be created by using the AmigaBASIC "PALETTE" command. To achieve this effect just set the foreground text colour or colour 0 and the background colour or colour 1 to the same red, green and blue values. For example inserting the line, PALETTE 0,0,0,0 : PALETTE 1,0,0,0 in a program will change both the background and the borders to black, thus rendering the borders invisible. This method has one major drawback in that it also renders any text invisible!

Dear AUI,

Please could you help me. I am setting up an Amiga fanzine, and I need some advice. I already own Deluxe Paint, so I can design covers and logos. Also, I have an LC10 colour printer, a 1/2 megabyte upgrade, monitor and stereo speakers. Could you recommend a suitable and CHEAP DTP system and necessary extras?

I will need to be able to use screen shots saved to disk as an IFF file with both Deluxe Paint and the DTP system. If my fanzine gets off the ground I will keep you posted with free issues. Thank you very much.

Yours sincerely,
SIMON BROWN, HAMPSHIRE.

Dear Simon,

At the bottom end of the Amiga DTP market there are a few major players. However, only one Amiga DTP supports colour printing on dot matrix printers, and that is of course Shakespeare from Infinity Software. However, the price of Shakespeare unfortunately could not be described as cheap at around the £150 mark.

On the black and white side there is more choice, and the popular choice from these is PageSetter from Gold Disk. This package was Gold Disk's original DTP package for the Amiga and as such it still stands up well to the competition. It has a very intuitive user interface and with the new 1.3 drivers can achieve some very nice printed output. It is currently available on its own for about a#a70 or as part of the value for money Publisher's Choice pack, which also includes KindWords 2, some clip art and some headline fonts. Publisher's Choice costs around £100.

All the currently available DTP programs for the Amiga will handle IFF graphics, it would be a pretty poor show if any of them didn't!

Dear AUI,

I'm writing this letter to you using "KindWords 2" on an Amiga 500, fitted with an extra half meg memory, a Cumana external disk drive and a Commodore MPS 1230 printer.

I find these ideal for my needs, except for one slight problem.

I have collected over 70 extra fonts and placed them onto two disks. I use these with the Workbench Notepad and have had good results. However, I cannot find a way of incorporating these extra fonts when using KW2. I would like to use them via the external disk drive.

I have put the command "Assign" into the C directory of KW2 and assigned "fonts:" to the disk in the external drive with no problems, but I cannot get KW2 to read these fonts.

Please can you help me.

Yours faithfully,
DEREK OAKLEY, CLEVELAND.

Dear Derek,

When designing KindWords, one of the decisions that the Disc Company took was that Amiga fonts when printed did not give the necessary quality for really good looking output. Because of this, they produced their SuperFonts, which admittedly give superb output on any dot matrix printer. However, due to this, KindWords does not support the standard Amiga font format, and thus will not allow the use of any such fonts with it.

Unfortunately, the fonts you have collected will without doubt be standard Amiga fonts.

Therefore, you only have three options if you want to use the collection of fonts you have accumulated:
(i) Struggle on with Notepad, or (ii) Buy a new word processor, or
(iii) Wait for The Disk Company to produce more Superfonts.

If you decide on (ii), I would recommend ProWrite 2.0 as an excellent word-

pro which supports standard Amiga fonts.

Dear AUI,

Please could you help me, but first I would like to congratulate you on your magazine. It is very well written. The problem is that I've bought a 3.5" disk head cleaner recently, but the instructions for the cleaner said to command your disk drive to operate for at least 30 seconds. Please tell me which command will make the Amiga's internal and external drives do this, if there is one.

Yours faithfully,

L. E. PALMER, WEST YORKSHIRE.

Dear Mr. Palmer,

*There is no Amiga command to spin the drive directly from the CLI or the Workbench. The method I usually use is to insert the head cleaner in the drive then wait for the Amiga to check it, this spins the drive for about three seconds. I then repeat this procedure another ten times or so. If this sounds a little less than scientific, then you try a utility to spin the drive which can be found on B.A.D. the disk optimiser (what does B.A.D. stand for? I think it's Bl**dy Amiga DOS).*

Dear AUI,

We currently have an Apple IIe, and will probably be upgrading to an Amstrad PC 1640, but I want a personal computer for myself. I considered buying an Amiga 500, but was told an IBM compatible was more powerful and could emulate all of the Amiga 500 programs. Also, I'm 12, and at the college I'm going to next year there are Apple IIe's. Can the Amiga emulate Apple programs? And can IBM compatibles emulate Apple IIe and Amiga 500 programs?

Yours sincerely,

PETE INGRAM, NEW ZEALAND.

Dear Pete,

Comparing a standard IBM compatible with a standard Amiga 500 is rather like comparing a push bike to a Porsche, apart from the fact that the A500 costs if anything a little less than an IBM.

The Amiga 500 is an incredibly powerful, multi-tasking computer with lots of state of the art features including a full set of specially designed custom chips. Take the graphics specifications as an example:

A standard PC with CGA graphics has a maximum resolution of 320 by 200 pixels, the A500's lowest resolution is 320 by 256. And that's even before we start to take the number of colours available into account! On the emulation front, I can quite categorically state that any PC, AT or even 386 would have great difficulty emulating an Amiga to say a 50% level. On the other hand, the Amiga can already emulate a PC although not very well!

As far as I know there are no plans for an Apple IIe emulator for the Amiga, although there is already a very good Apple mac emulator called A-Max.

Dear AUI,

First of all I would like to complement you on (in my opinion) the best read of the month! But now down to business. I, unlike a lot of writers don't know much about computer talk, so please bear this in mind. I would like to know whether or not you need a special telephone for a modem (Pace Linnet), or whether modems come complete with phones, and whether or not you need software for them.

Also, could you possibly find me the cheapest 2 meg expansion (populated) around, I don't mind whether it's internal or external. I am 13 and obviously have limited amounts of money.

Please could you knock up a rough price tag for a complete modem package and phone for the A500.

Yours sincerely,

S BARNES, SUFFOLK.

Dear Mr. Barnes,

Most modems on the market today, including the Pace Linnet, connect directly into the normal BT socket. A special phone is not needed. Most modems will also have a pass through, which can be used to connect the phone as well. This enables you to use the phone while the modem is not in use without the need to unplug the modem. Once you have bought a modem, the only other items you will require is a lead to connect it to your Amiga and some communications software. There is plenty of good comms software in the public domain, try Access on Fish Disk 98. A complete modem set up for the Amiga should cost somewhere around the £150 mark.

RAM prices constantly fluctuate, so it is impossible to predict the cheapest expansion at the time you will be reading this.

However, two of the most competitive companies in this field are M.A.S.T. on 077082-234 and Bytes + Pieces on 0860-254344. Also worth considering is the Commodore A590 Hard Drive +, see last months Amiga Answers for more details.

Dear AUI,

I wonder if you can possibly help me with a problem that is driving me mad. It all started when my original A500 Amiga developed a fault and had to be sent away for repair.

As I am lost without an Amiga, which is in constant use, I took the opportunity of buying the latest version complete with all the new ROMs and the latest "Workbench 1.3".

All went well, until I attempted to replace the old 1.2 Workbench on my SupraDrive hard disk with the 1.3 version supplied with my new A500.

The first thing I found was that the "Amiga Shell" would not run from the hard drive, when clicking on the Icon, a requester appeared asking for Volume NEWCON.

When cancelled, an ordinary CLI window appeared. As far as I can tell, all the new files and directories have been placed on the hard disk, and I have edited the startup-sequence file on my boot disk.

I am fairly sure that this is part of the problem. Going back to the original Workbench disk, re-copying more files, and again re-editing the startup-sequence, I managed to recover the CLI (but not the Shell). However, I found that the RAM Disk had vanished!

Opening a CLI I tried to recover it by using the Makedir command. However, the system then immediately Guru'ed again with the same number as before. Re-booting the system, the startup mounted the Supradrive successfully, but then stopped part way through with the message: Can't find RAM: Assign failed return code 20. In order to continue, I then have to manually type in the LoadWB command and then EndCLI. The system can then be used normally, but without the luxury of the RAM disk. By now you have probably gathered that I don't really know what I am doing! So I would be eternally grateful if you could suggest a cure. The RAM disk will always return if the system is booted with an original copy of Workbench, but then I can't use my hard drive.

Yours desperately,

S BRAMBLEY, DEVON.

Dear Mr. Brambley,

Many people have become awfully confused when trying to convert from a hard disk system based around Workbench 1.2 to one using Workbench 1.3. When going through this process there are a few pointers to follow. Firstly make sure that you copy everything on the Workbench 1.3 and Extras 1.3 disk to the partition on your hard disk that you use as "SYS:". Secondly make sure that you convert your hard disk boot disk to Workbench 1.3 as well.

Thirdly make sure that the startup-sequence that you use also includes all the relevant commands for 1.3.

With regard to your problem with the Shell there are three things that you need to check for:

(i) The lines, resident CLI l:shell-seg SYSTEM pure add mount NEWCON: must appear in the startup-sequence file on your boot floppy. (ii) The files "shell-seg" and "newcon-handler" must be in the "l" directory on both your hard disk "SYS:" partition and you boot floppy.

(iii) The "CLI" file must be in the "system" directory on both your hard disk and your boot floppy.

If all these things are right then the Shell should operate properly.

Accessing the RAM disk when the file "ram-handler" is not present in the "l" driectory will often cause the Amiga to crash or come up with that error you mention. The solution is, of course to return "ram-handler" to the "l" directory.

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Vortex System 2000

Mark Smiddy takes a sideways glance at a multi-faceted, 40Mb hard disk drive

By now there cannot be many people - certainly no regular readers of ***AUI*** - who have not heard about the current wave of hard disk drive units suddenly flooding the marketplace. At last we are becoming almost as spoilt for choice as PC users! Admitedly, that is a slight exageration, but the situation is steadily improving, nevertheless. Proof positive of this, Vortex Computersysteme GmbH have just sent us their latest offering which has some - well, one very unusual feature to say the least.

In essence, the system is based around a very straightforward (dare we say common-or-garden) 3.5" hard disk drive housed in a neat buff-coloured casing to match that of the Amiga. Aha, I hear you cry, nothing whatsoever out the ordinary there; of course you would be right. Slightly unusual is the inclusion of a remarkably quiet fan to cool the power supply - but still nothing special.

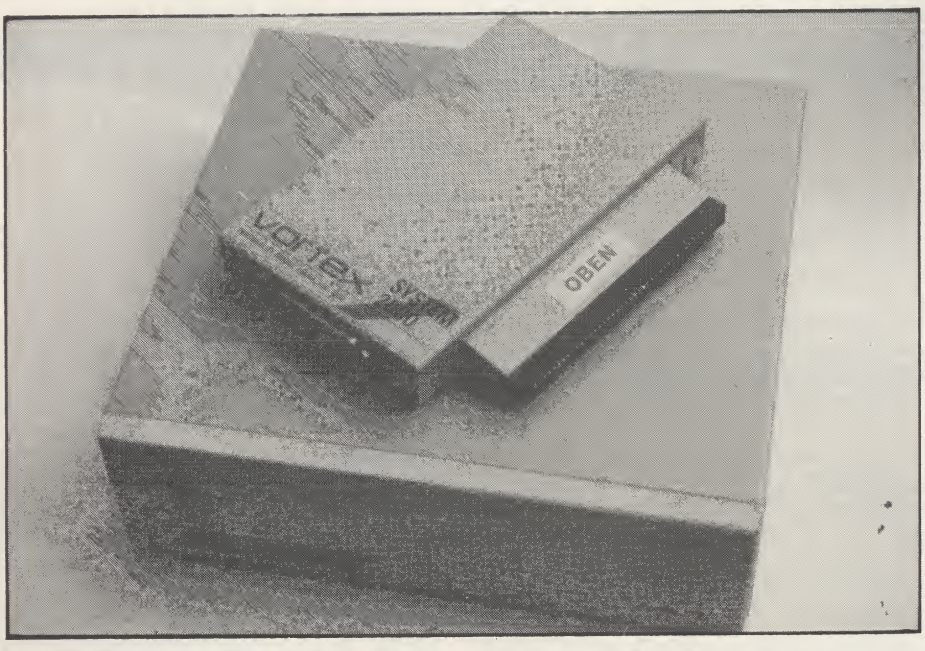
As for the the drive itself, this has a claimed access time of around 45mS - which is slightly less than twice as fast as the unit fitted to CBM's A590 - around 80mS; however, claimed access times are in reality a bit of a con and rarely serve to reflect the true speed of a drive in any given - real-life - situation. Further information on the facts and fallacy of access times can be found on page 110 of the July 1989 issue of ***AUI***.

So what makes the Vortext so special? Quite simply this: schizophrenia - or, put more eloquently, multiple personalities. These are characterised by the personality (interface) module supplied with the Vortex system.

Personality Modules

In itself this may seem an odd idea, but consider this: you trade in your A500 for a brand-spanking B2000. Now what do you do with the A590 you bought two months ago? You have to trade that in too - probably for much less than you paid for it! If you had bought the Vortex systemn on the other hand, all you would have to do is replace the personality module with one suitable for the new machine and away you go.

The advantage is of course cost; personality modules are much cheaper to replace than a complete dedicated system. Not only that, but Vortex can even supply modules for systems as far afield as the Amstrad PCW or the IBM PC range. However, it should be remembered the format used by the DOS in different machines is completely different - so you will not be able to read an Amiga formated Vortex drive on a Commodore PC. However, it should be possible to read the A500 system with a B2000; although as expected, the larger machine does require a different module.



The module we were supplied was compatible with the A500 and A1000 machines - so it is unlikely the drive will suffer from the type of incompatibility problems mentioned above; plus it includes a pass-thru bus connector and second SCSI interface. At around four inches wide and under an inch high, the module system has significant a size advantage over both the Spirit HDA-506 and the A590 in that it does not take up too much room next to your machine. At the risk of sounding trite, the whole thing is so small it could almost be called cute.

Setting the system up is so easy a child could do it - provided you buy a pre-formatted and pre-partitioned drive it is a simple matter of: plug in, switch on and go! If you want to set up your own partitions this necessitates a glance over the manual - and a play around with the supplied software - it is not too difficult.

In use the Vortex unit feels nice, looks nice and appears very sturdy indeed. Keep in mind, you will be faced with the proverbial problem of no autoboot and no FFS if you happen to have a pre-Kickstart 1.3 machine. That said, a hard disk drive improves the Amiga - and AmigaDOS - considerably. The Vortex offering is not the fastest we have seen - that prize is held by the HDA-506 - but it is arguably the most versatile and easy to live with. ***M.S.***

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ROBOCOP

Ocean

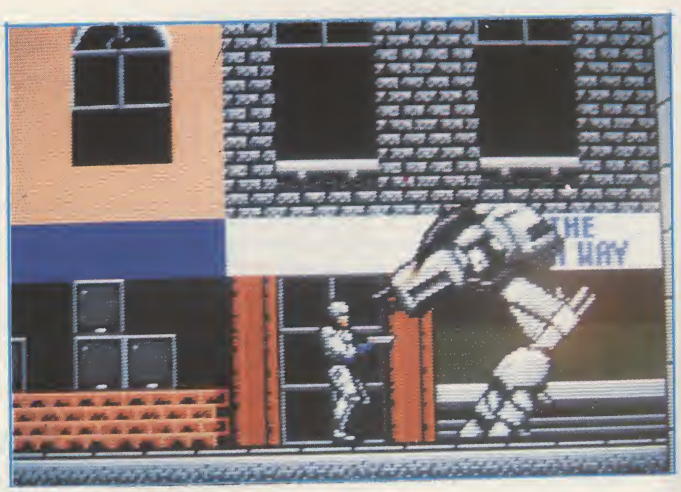
Clarence Boddicker is a bad lad. It was he and his mob who after riddling Patrolman Murphy with lead, relieving him of his right hand in the process, murdered the man who was about to become Robocop. With a part of his brain blown away, and a torso resembling a tea-bag, Murphy was certified dead on arrival. This was just what the Detroit Police Force had been waiting for; a chance to take Robocop off the drawing board and into reality. They had the technology. They could rebuild him. Patrolman Murphy was about to become the world's first six million dollar Robocop...

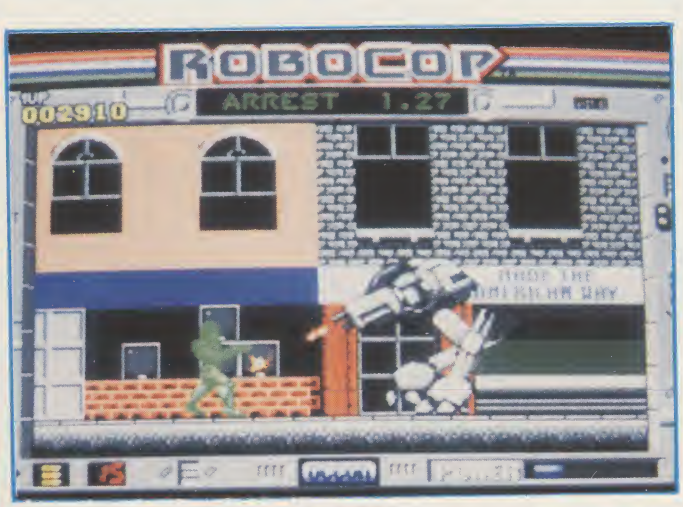
"For the thinking man's beat 'em up, check it out (but stock up on the sick bags)."

Standing tall in his new titanium armour, his brain re-programmed and memory wiped, Robocop was new man. The ultimate cop began busting criminals at a rate never before seen. Everything was going to plan, until he started experiencing flashbacks to his death as Murphy. Vengance pushed its way to the top of his prime directives, and the hunt for Boddicker began.

The game cuts in just about here. As Robocop, you are thrown in at the deep end. A riot has broken out, and you are called upon to restore order. Running along the lines of Rolling Thunder, the core of the game involves working your way from left to right through a number of multi-directionally scrolling levels. The first, set in the city streets, sees crazed, unarmed assailants charging into you. One mechanised punch puts them out for the count. As the enemies take up arms, so you step up your action accordingly. Mid-way through level one, you stop to take out your gun from its compartment inside your leg. The level end brings with it a showdown with ED209, another android law-enforcer from the Detroit Police labs.

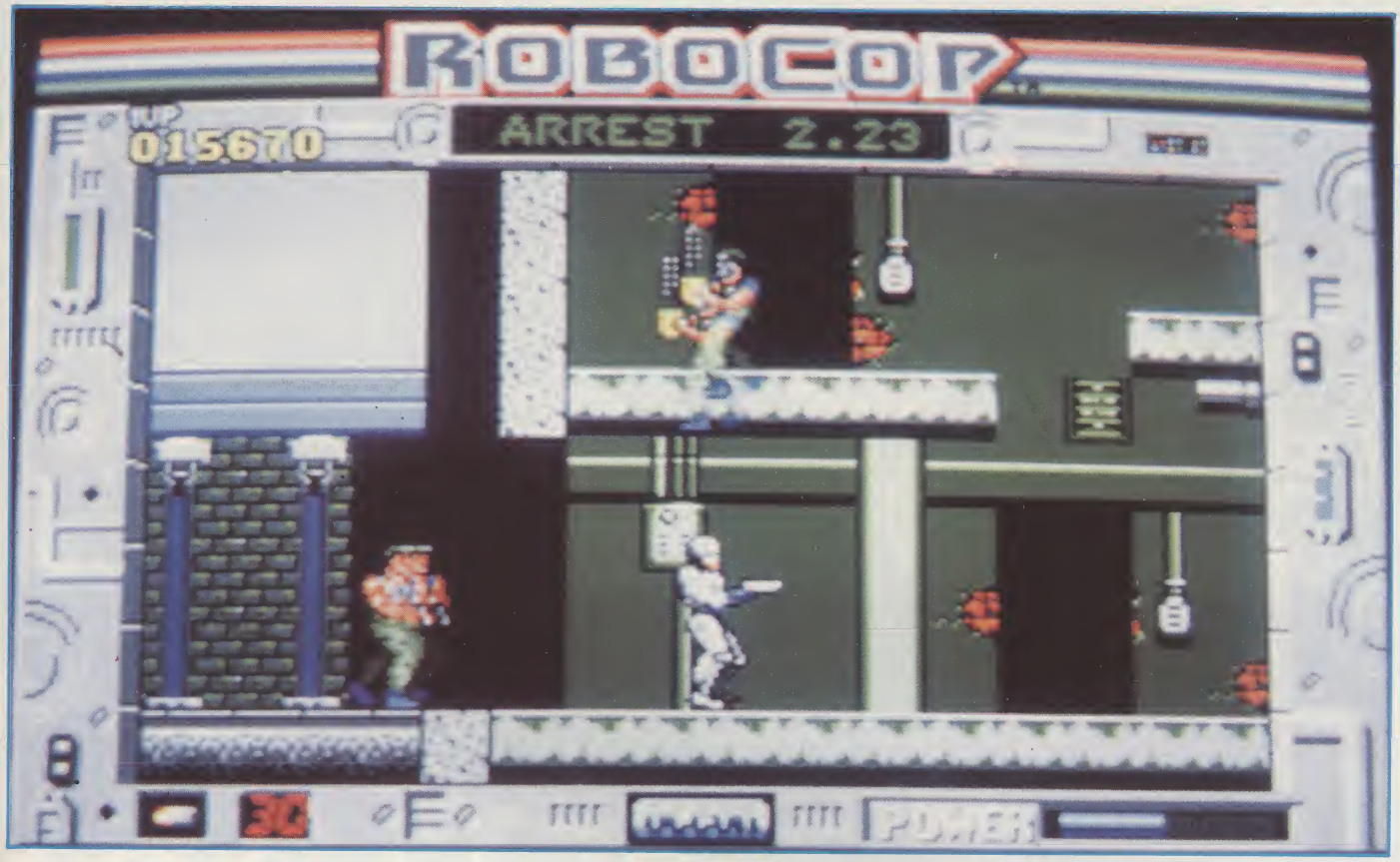
Between each level you get a chance to top up your energy supply. The first of these sub-games is a simple shooting gallery. After the second level, you get to see how Ocean's Software Manager Gary Bracey would look with a variety of alternative hairstyles, in a mix-and-match photofit session comprised of digitised faces from the Ocean gang. A further scene from the film is recreated in the third sub-game, in which you have to shoot down a rapist shielding himself with his victim.





The levels have been well designed, progressively increasing in complexity. The second introduces vertical scrolling, and the weapon upgrades improve from the scatter bullets to a powerful photon bolt. Background graphics also improve from the occasionally bland first level. Colour is liberally used but doesn't undermine the sombre atmosphere. In the junkyard, the weapons take another step forward with the availability of the flamethrower. This comes in handy when you are attacked soon after with a JCB digger.

Robocop's low point in its ST format was the sound. Understandable, as the Atari's sound chip is none too impressive, and samples eat up precious processor time better used for scrolling the screen. Enhancements have been made to the Amiga version, but not to the extent I had hoped



for. More speech has been included, but has not been sampled directly from the film. What is, I would guess, the voice of the programmer, digitised and put through a robotiser, leaves something to be desired. The effects are better, but the constantly twinkling music keeps you from cranking up the volume.

The slightly reduced scrolling window of the ST remains, but the only downer this puts on things is a smaller scale of graphics than the coin-op. A few very minor graphical details have been altered, amounting to little or no more than colour enhancements. Fortunately, the graphics were pretty good in the first place; very neat as you would expect from a programmer, but with a little more artistic flair than you might have foresawn.

Robocop does well in combining a favoured gamestyle with a number of additional extras. The variety gained from the sub-games, makes the whole game a lot more interesting to play than if it were a straight Rolling Thunder clone. What's more, the feel of the film has been retained, so the game should appeal to the same crowd that enjoyed the movie. There is still that question of the extra fiver Ocean are asking for a game almost identical to the £19.95 ST version. With two games coming from one chunk of source code, the argument of longer development time is counterbalanced, and the days of ST games outselling their Amiga counterparts are gone. Still, pricing aside, it must be said that Robocop is a great game, and one that no arcade addict will want to be without.

T.H.



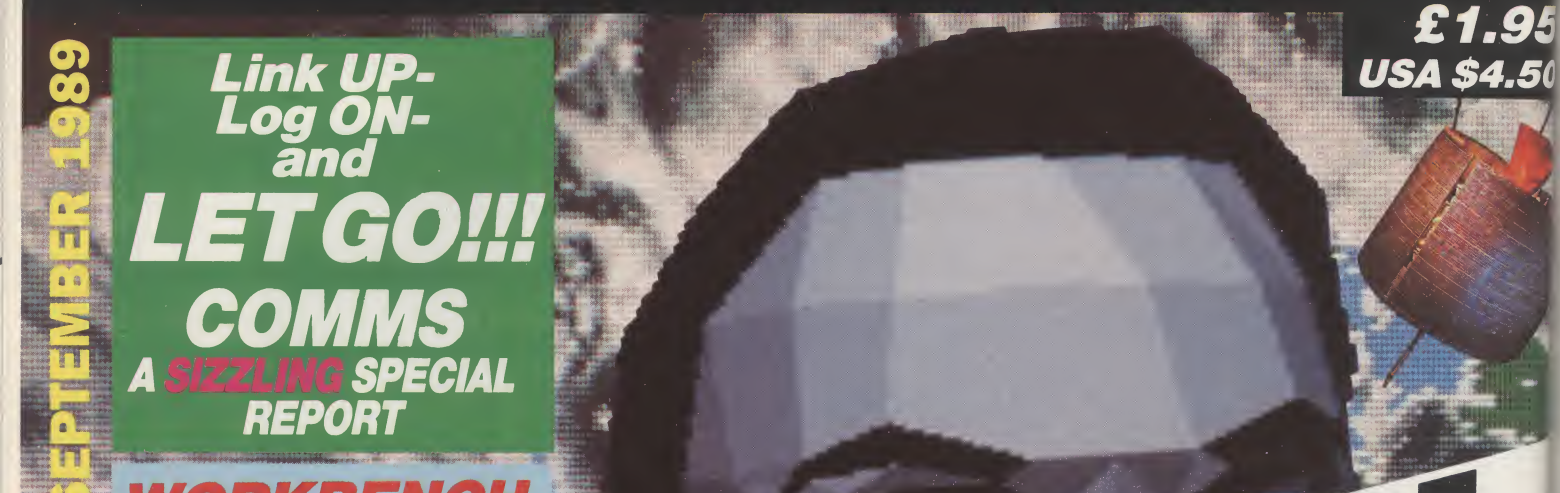
Peter, an Atari, and an Amiga...
Peter Johnson has proven in the past that a "one man band" programmer can still cut it in today's world of multi-membered game developement houses. It was no surprise then, that Ocean entrusted him with the creation of the ST and Amiga versions of what was their most valuable film tie-in to date. He recently came up with the goods for the Atari machine, achieving surprisingly smooth scrolling, combined with impressive graphics and compulsive gameplay. Of course, the Amiga game shares a good deal of code with the ST version, but you'll be pleased to hear a few additions have been made to the original.

Graphics: 8 Sound: 6 Playability: 8
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Driving By Default

Baffled by Bernoulis? Perplexed by Platters? Or just hard up for a hard disk – Mark Smiddy explains there is more to Commodore's A590 than meets the eye...

At last, Commodore's long awaited A590 hard disk/RAM expansion has arrived, and at an unexpectedly low price, too. When I last heard anything of the machine, informed sources expected the machine to sell for around £600. However, no doubt in the wake of fierce competition, the A590 sells for just £399 all in. Nevertheless, I should point out there are still cheaper units around if you care to look for them. Spirit Technology's HDA506 with 20Mb drive – reviewed in the July 1989 issue of *AUI* – is a typical example.

A590 Specifications

The important thing to realise with the A590 though is it is not just a hard disk. The board is also fitted with sockets for up to 16 of the new 1Mbit RAM chips – taking a standard A500 to 2.5Mb without the need to fit an A501 clock card/RAM expansion. You may well ask why you should fit extra memory to the A590 *before* fitting it internally.

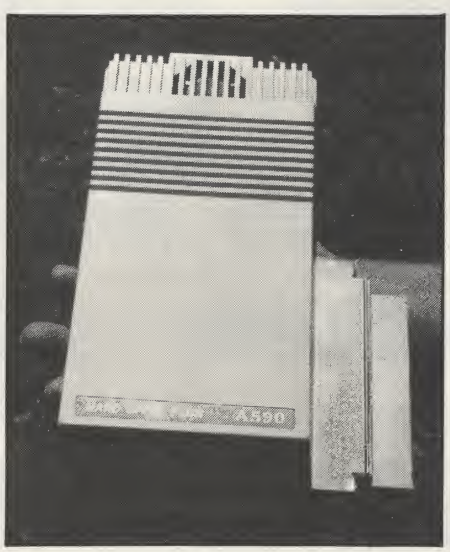
The simple answer is this: memory fitted to the A590 is true fast RAM – memory on the A501 and similar boards is not! When the Enhanced Chip becomes available later this year, the A501 expansion RAM will be treated as 0.5Mb of chip RAM. In effect, existing A500s and A200s fitted with 1Mb have two 0.5Mb sections of memory with a large 'hole' in the memory map. Until the ECS is available, software which requires a large amount of *contiguous* RAM cannot have it.

Normally, this is all invisible to the user since the memory is looked after by Exec. The problem only becomes apparent when your software screams "Out of memory!" and you stil have 600K+ left. Two utilities on the Workbench disk help demonstrate the problems: Avail and Mergemem. I shall leave you to experiment with these yourself.

The Hard Disk Unit

Enough about memory though, important as this no doubt is, the real attraction of the A590 – and most of the asking price – is the hard disk unit. The machine can be supplied fitted with one of two drives, manufactured by either Epson (more famous for printers) or Miniscribe (well known for their PC hard disks).

Both drives are specified as 20Mb 3.5″ units with an 80mS access time. The only difference between these two options is the interface, which is, in any case, handled internally by the A590. As a matter of interest, the Epson uses a special version of the XT drive from the Commodore PC, the Miniscribe a standard SCSI. These minor differences need only be of concern if you need to format the hard disk at low level. All A590s are supplied pre-formatted and ready to go.



After you have fitted the A590 and switched it on, if nothing happens then you must have made a common mistake. As with all hard disk drives, the A590 must be switched on before you switch the machine on and must remain so all the time. In order to stop anyone inadvertently switching the machine on first, the A590 will not come on until the machine is turned on. This is a nice touch.

The next point depends whether you have a 1.2 or 1.3 Kickstart ROM installed. If you have 1.3 and a DIP switch at the rear of the A590, the Amiga boots from the hard disk. If, like most owners, you still have 1.2 then the initial startup is from a floppy. Even so, with some tweaking to the startup script Workbench can still be booted very quickly indeed.

Conclusion

In the short time I have had the A590 it has proved to be a terrific machine. Since I first saw it demonstrated at World of Commodore in Canada, it has undergone some subtle changes – not least that the Fast Filing System is now available for ALL partitions. This means that you do not have to boot with the old filing system as before. Also. this largely belies any problems with the slow (80mS) drive.

Lastly, according to a source at Commodore, market trends point to a drop in price in external SCSI drives. This means you could add several more 40Mb drives to your system very cheaply; the interface is already there. The A590 is not perfect – what is – but even by Commodore Amiga standards it is a superb piece of engineering. Well done all concerned, I cannot praise it too highly.

M.S.

Price: £399.00. Contact: Authorised Commodore dealers. Review unit supplied by: CHIPS, 151-153 Linthorpe Road, Middlesborough, Cleveland, TS1 4AG. Tel: (0642) 219139.
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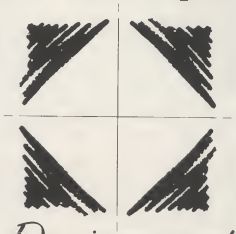
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MOON RECORDS

Disk Technician Advanced



For Amiga 2000 owners with hard drives, an "automatic" security guard may be the answer to your concerns over failures. Len Keighley reports

The acquiring of some form of large volume disk storage, either a hard disk or hard card, brings along problems not apparent while working under the restriction of floppy disks. A 32 megabyte hard disk can contain upwards of 1000 files, loss of any could have serious consequences. Backup is no longer a simple task of just copying the disk, even the archiving of a 32 megabyte disk can take up to 100 floppies. Some hard disks are supplied with a disk management package which will help to avoid the loss of files. For those of you who have purchased a hard disk that does not include any hard disk management system, help is at hand. Prime Solutions, of San Diego California, have brought out a package which is capable of carrying out the same level of control.

Disk Technician Advanced is designed to act as a preventative maintenance tool as well as a mechanic/repairer if faults subsequently occur. The program is normally run from a floppy disk because to install it on your hard-disk impairs some of its operation, however this is only a restriction not a requirement and it will still work from the hard-disk.

Modes

For preventative maintenance, there are three different modes of operation which, unless overridden, the software can decide upon for itself. One of the differences between these, concerns the amount of time that Disk Technician spends examining the disk. The three modes of operation also occur at different times, these are, Daily, Weekly and Monthly. The Daily takes about 2 minutes, the Weekly about 30 minutes and the Monthly about two and half hours, these figures are based on a 20megabyte hard-disk. The checks carried out by the software will identify various failures depending on the mode selected and in some cases it will even attempt to repair those failures.

The daily test carries out a read-only check for soft errors which includes the repair if necessary. The weekly test includes the daily level as well as a proprietary write test. Finally, the monthly test includes the lower two levels but carries out special, exhaustive read/write tests. Basically the software is searching the hard-disk for disk errors of the 'Abort, Retry, Ignore, Fail' type, which could mean that you are in danger of losing a file. Before this level of failure occurs it is usually preceded by a number of soft errors on the same tracks.

"An expert system is then employed to decide whether or not the track has reached a critical state."

Once an area of the hard-disk begins to show more than three of these types of error the possibility of loss can be imminent. To carry out these checks on a regular basis the software maintains a database of the results of previous runs, again split into the three modes of operation. An expert system is then employed to decide whether or not the track has reached a critical state. The software will then carry out a low level non-destructive format of the area of the disk that could be about to fail. This means that the software will not destroy the data held on the suspect track. If the track cannot be repaired the data is moved to another part of the disk and the track marked as bad in the File Allocation Table so it cannot be allocated again.

The Expert System/Artificial Intelligence has the capability of identifying the condition of the disk and may recommend that you carry out repairs after as few as 50 error detections, however, it may also continue to provide all-clear results from the return of 10,000 errors.

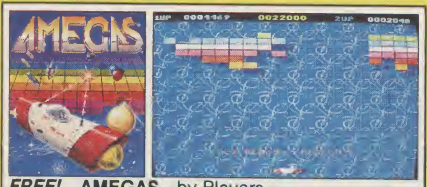
Conclusion

This class of software is of the type, which you do not have to use often, for it to pay for itself. The only possible problem, is the amount of trust in which you place in it. It does not remove the need for backups of your hard-disk for these will still be your only saviour if the disk completely fails. However, use of the software will warn you of approaching doom and therefore allow a full disk save to be carried out, while the disk is operational. Its only pitfall is the length of time taken to carry out the monthly run and this will be the first one attempted on installation. This can of course be avoided by letting it run overnight.

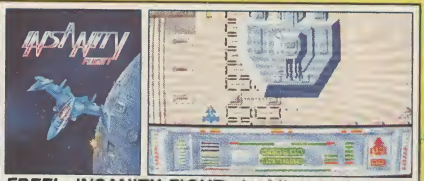
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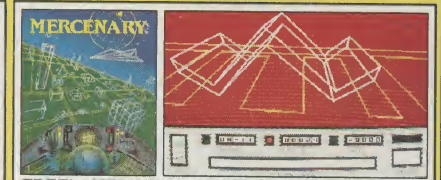
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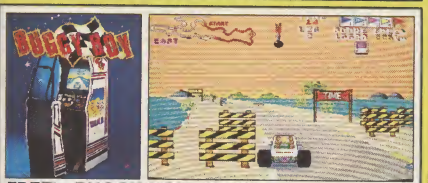
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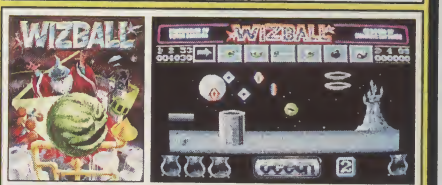
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The design of the SEUCK is excellent. The only area that disappoints is the graphics. The sprite movements can be rather jerky , and the player's ships fly around in large steps. If you are willing to spend the time getting to grips with the SEUCK then the end results are worth the effort.

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OVERALL: 89%

Fast Break
Accolade

Fast Break gives players an opportunity to pick their own team from a selection of first class pro's or design their own players giving each individual talents and strengths.

Playing Fast Break can be confusing. Trying to establish which player is being controlled creates a bit of an eye strain. The controls are little help, being confusing and maybe even temperamental at times. The so-called "squeak of trainers on the gym floor" takes a lot of imagination especially when they don't correspond to ther players' movement !!! The graphics are nothing to rave about. Priced quite high, the game may only appeal to the basketball enthusiast collecting simulations.

PRICE: £24.95
OVERALL: 55%

Rick Dangerous
Firebird

Rick Dangerous awakens memories of old Dan Dare comics in this Manic-Miner, Jet Set Willy style of arcade classic. A well-put-together comic included within the packaging, outlines the "Story so far..." as you enter the temple in an attempt to find the ancient map.

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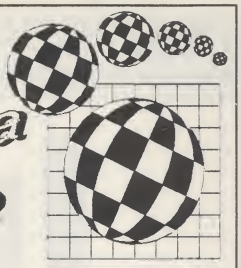
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Intuition *Part V*

```
struct Gadget ColThree = {
   &ColTwo,
   158,-10,29,10,
   GADGHCOMP
   GRELBOTTOM
   GADGIMAGE,
   GADGIMMEDIATE
   RELVERIFY
   BOTTOMBORDER,
   BOOLGADGET,(APTR)&colour3,NULL,NULL,NULL,NULL,COLOUR3,NULL};


struct Gadget LineFree = {
   &ColThree,
   33,-10,29,10,
   GADGFLAGOFF,
   GADGIMMEDIATE
   RELVERIFY
   BOTTOMBORDER
   TOGGLESELECT,
   BOOLGADGET,(APTR)&freeline,NULL,NULL,NULL,NULL,FREELINE,NULL};

struct Gadget DrawFree = {
   &LineFree,
   1,-10,29,10,
   GADGFLAGON,
   GADGIMMEDIATE
   RELVERIFY
   BOTTOMBORDER
   TOGGLESELECT,
   BOOLGADGET,(APTR)&freedraw,NULL,NULL,NULL,NULL,FREEDRAW,NULL};

struct RastPort *WinRP;    /*Need a POINTER to a RastPort for Draw() etc*/

struct NewWindow NewWindow = {
   20,20,300,100,0,1,    /*Usual NewWindow sort of thing*/
   IDCMPFLAGS,
   WINDOWCLOSE
   SMART-REFRESH
   ACTIVATE
   WINDOWSIZING
      /*One*/
   WINDOWDRAG
   WINDOWDEPTH
   NOCAREREFRESH
   REPORTMOUSE,    /*line!*/
   &DrawFree,
   NULL,
   "I love anatomy, really",    /*Title is a lie, in fact.*/
   NULL,NULL,WINSMALLX,WINSMALLY,WINBIGX,WINBIGY,WBENCHSCREEN};

void main(),doIDCMP(),OpenStuff(),CloseStuff(),doGadgets(),doDraw(),
   doLine();    /*Loads a functions this month*/

   /*Now the global variables*/

UBYTE mode;    /*This is global to indicate if the left button is held down*/
USHORT DrawMode = FREEDRAW;
USHORT MinX,MinY,MaxX,MaxY;    /*Limits imposed by window dimensions*/
USHORT StartX,StartY;    /*This is the start point of the line*/
USHORT OldX,OldY;    /*Previous X & Y coordinates*/
USHORT DrawColour = COLOUR1;    /*Start off with colour 1*/

void main(){

   OpenStuff();
   SetDrMd(WinRP,JAM1);
   SetAPen(WinRP,1);
   while(1){    /*You can count on 1 being TRUE... I hope*/
   doIDCMP();    /*A sneaky way of doing an "eternal" loop*/
   }
}
```

continued on page 111

```
void OpenStuff(){

      /* Open up the intuition library */

   IntuitionBase = (struct IntuitionBase *)    /* These 2 lines are */
   OpenLibrary("intuition.library",0);    /* one statement. */
   if (IntuitionBase == NULL) exit(FALSE);    /* Just checking */


      /* Now try the graphics routines */

   GfxBase = (struct GfxBase *) OpenLibrary("graphics.library",0);
   if (GfxBase == NULL){
   CloseLibrary(IntuitionBase);
   exit(FALSE);
   }

      /* Now open the window in WorkBench screen and check it exists.
   If something has gone wrong, give up after closing library */

   if ((Window = (struct Window *) OpenWindow(&NewWindow))    NULL){
   CloseLibrary(IntuitionBase);
   CloseLibrary(GfxBase);
   exit(FALSE);

   WinRP = (Window->RPort);    /* Set RastPort pointer */
   AddGadget(Window,&Stretch,0);    /* Top of list, if I may be */
   RefreshGadgets(&Stretch,Window,NULL);    /* so bold... */


void CloseStuff(){    /* This is more or less a reversal of */
   RemoveGadget(Window,0);    /* OpenStuff() above */
   if (Window) CloseWindow(Window);
   if (IntuitionBase) CloseLibrary(IntuitionBase);
   if (GfxBase) CloseLibrary(GfxBase);
}

   /* This is where most of the work is done but try & keep the routine
   small by invoking other functions as well */
```


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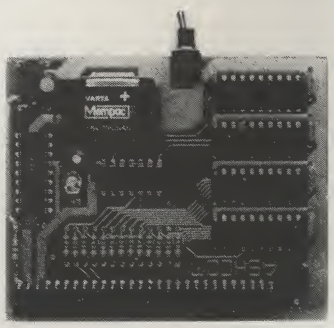
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AMIGAWORLD REVIEW, APRIL 1989.

"MovieSetter...the animation program to have... Gold Disk has set a standard for Amiga animation."

MOVIESETTER

A mover and shaker.

By Gary Ludwick

BILLED AS THE first WYSIWYG (what-you-see-is-what-you-get) animation package, MovieSetter combines tradition with innovation. This program integrates classic animation elements into a format that differentiates it from its predecessors.

Your building blocks are faces (commonly called cells), backgrounds, sets, and tracks. A face is a single image of an animated object; a set is a series of faces that portrays animated action by following a logical sequence.

The set editor . . . contains most of the drawing tools found in paint programs, plus some animation specific ones, such as rotation, flipping, and resizing tools.

MovieSetter allows complete flexibility of face placement and order.

Once you have assembled a set, you can define an object's horizontal and lateral movement on the screen with a track. You load your background and set, and the first face appears on the screen attached to the cursor arrow. Simply position the cursor where you want the action to begin. Clicking the left mouse button places the first face, advances one frame and brings up the second face. Repeat this process to lay the entire track.

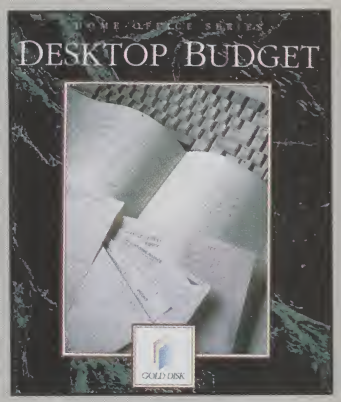
A group of track-editing tools allows you to move tracks after you have laid them down, place them in front or in back of others, insert new elements, and copy, cut, and paste tracks via keyboard or mouse. Best of all, you can see the results of your editing at once.

MovieSetter offers full palette control for up to 32 colors, color cycling, an interlace/full-scan option for video transfer, speeds up to 60 frames per second, plus clipboard and storyboard functions. Syncing digitized stereo sound with the video is again as easy as clicking a mouse button. MovieSetter provides not only stereo output for your soundtrack, but also channel-to-channel panning and the ability to change pitch as well.

This is the animation program to have. Gold Disk has successfully combined important elements - IFF compatible files, real-time previews, stereo sound, and a superb manual - into a powerful, flexible, easy-to-use package.

As they did with desktop publishing, Gold Disk Inc. has set a standard for Amiga animation.

The above article is excerpts from AmigaWorld's April, 1989, MovieSetter review. This ad was created with Professional Page.



AmigaWorld, July, 1989

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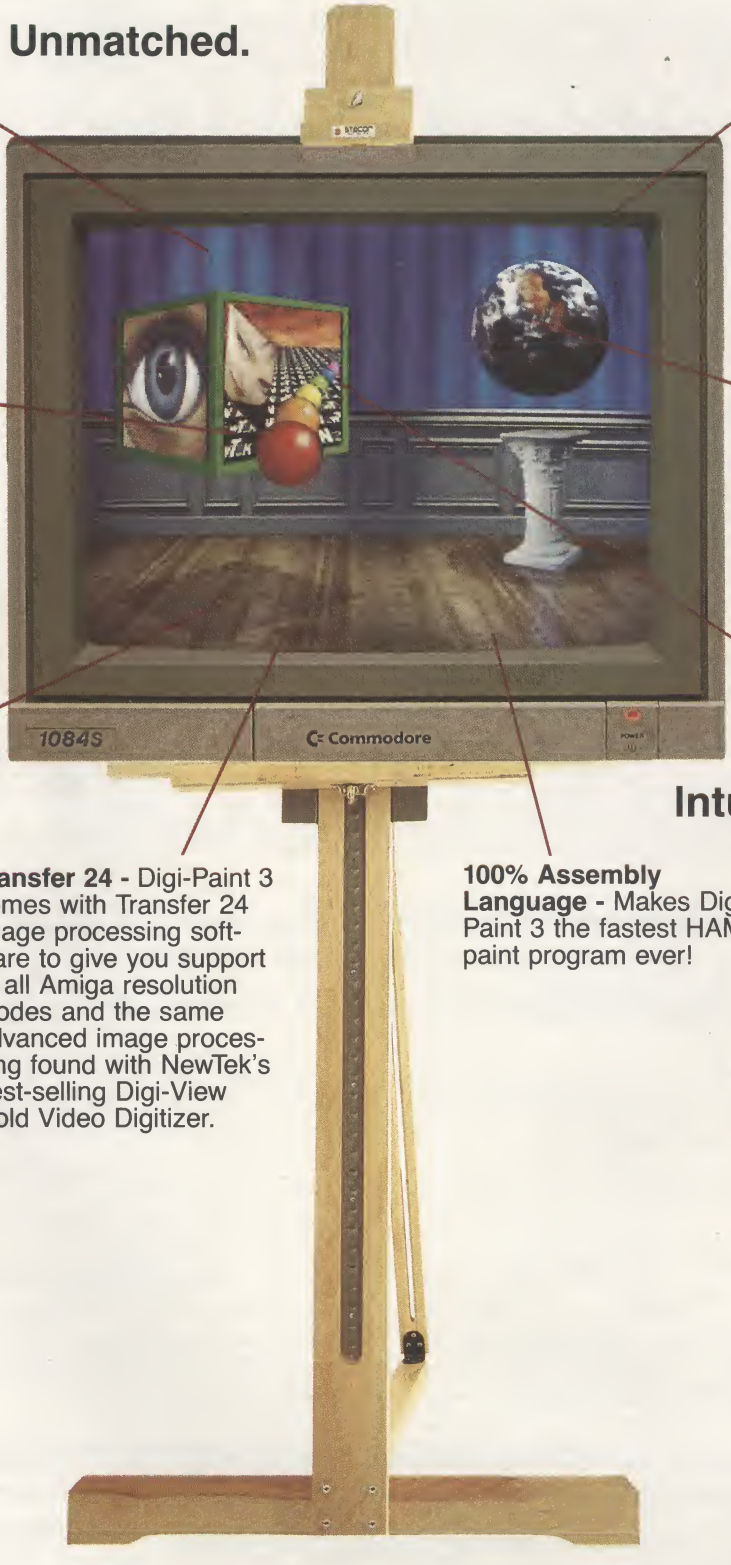
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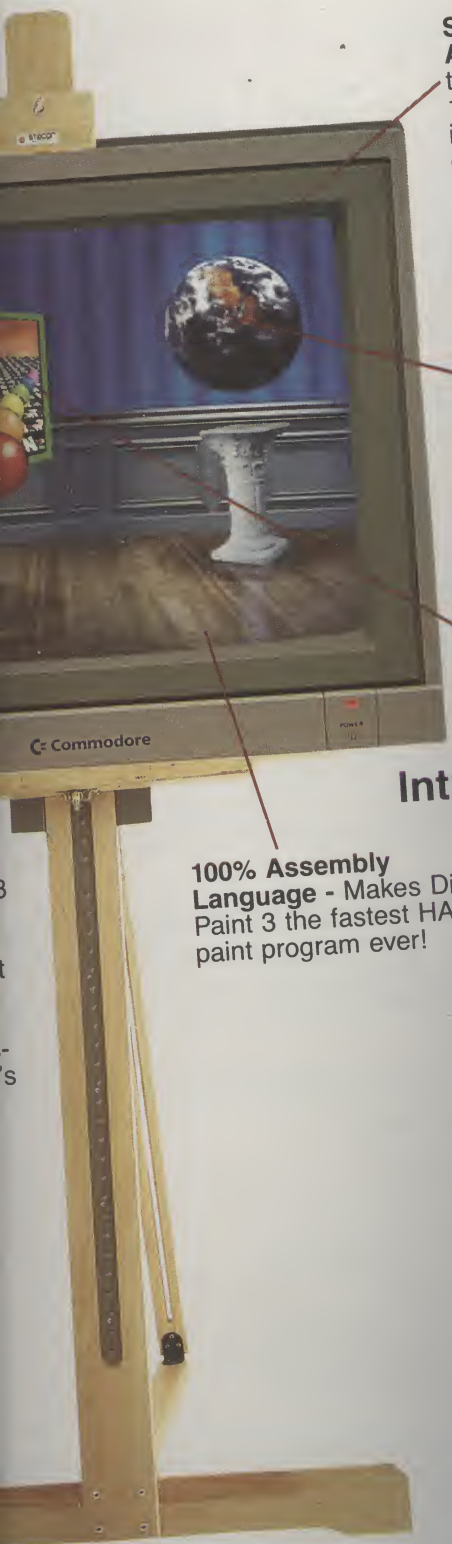
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